Guidance for Conducting Emergency Debris, Waste and Hazardous Material Removal Actions Pursuant to a State or Local Emergency Proclamation

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1. Introduction

In December 2010, the California Environmental Protection Agency (Cal/EPA) convened a Asbestos Debris Task Force to address the challenges the State of California faces for removing hazardous materials, waste, and debris from commercial and residential[1] areas during state and federal disaster response and recovery operations. The Task Force included members of the Air Resources Board (ARB), Bay Area Air Quality Management District (BAAQMD), California Emergency Management Agency (Cal EMA), Cal/EPA, California Air Pollution Controls Officers Association (CAPCOA), the Department of Resource, Recovery and Recycling (DRRR, aka CalRecycle), Department of Toxic Substances Control (DTSC), State Water Resources Control Board (SWRCB), and the U.S. Environmental Protection Agency (USEPA).

Previously, waste and debris removal from catastrophic incidents must be handled in accordance with the National Emissions Standards for Hazardous Air Pollutants (NESHAP). The Task Force sought to identify and agree on debris management options to address local, state, and federal regulations during a natural disaster or man-made incident. A sub-committee led by Cal/EPA and representatives from ARB, Cal/EPA, CalRecycle, and DTSC was formed to address the development of debris management guidance and protocols that would address the NESHAP regulations, while utilizing best management practices to maintain protection of human health and the environment.

This guidance document was created by the Task Force for conducting emergency hazardous material, waste, and debris removal actions under a local or state Proclamation of a State of Emergency.

[1] Residential means an area where the primary land use is housing, as opposed to industrial and commercial areas. Housing may vary significantly between, and through, residential areas. These include single family housing, multi-family residential, or mobile homes. Other land use area must be evaluated for site specific hazards.

2. Purpose

The purpose of this guidance to identify and standardize the approach for local and state agencies to utilize for conducting debris, waste, and hazardous material removal activities under a local or state Proclamation of a State of Emergency. This guidance identifies best management practices (BMP) for undertaking the removal of debris and hazardous materials (including asbestos) from residential and commercial structures after a natural disaster or large scale incident. These best management practices and standardized methods will provide a consistent statewide approach to the development of a debris management plan for conducting emergency removal and cleanup actions to protect response personnel, the surrounding community, public health, and the environment. *It should be noted that this document does not discuss debris from industrial sites. These waste streams should be separately characterized, handled, and disposed of outside residential and commercial waste streams.*

3. Background

Each year a disaster strikes California that produces debris which contains potentially hazardous substances. In addition to hazardous materials, debris from large scale incidents and natural disasters also includes building materials, sediment (sand, gravel), vegetative or organic matter (trees, etc.), vehicles, electronics, clothing, and other personal property. Debris from a catastrophic incident should be cleaned up, transported and disposed of in a manner that protects public health, meets worker safety standards and conforms to the applicable local, state, and federal requirements.

In the wake of a natural and human-caused emergency or disaster, local and state governments are left with the challenge of conducting the cleanup. Inconsistent protocols for the proper identification, handling, and disposal of residential, commercial, and industrial debris and hazardous materials may result in potential health and environmental impacts. An effective coordinated response from local and state agencies with jurisdictional and regulatory authority to conduct response actions is needed to assess, contain, identify and remove hazardous materials, waste and debris that pose threats to public health and the environment.

Recent residential debris cleanup activities by the California Department of Resources Recycling and Recovery (CalRecycle) and Department of Toxic Substances Control (DTSC) have identified inconsistent interpretation of the policies and regulations for conducting emergency debris removal actions throughout state. The main issue is whether or not the structural ash and debris from a wildland fire or other large-scale disaster should be treated as asbestos containing material (ACM) under the National Emissions Standards for Hazardous Air Pollutants (NESHAP) due to the assumption that the ash and debris may contain asbestos. DTSC currently classifies asbestos-containing material as hazardous waste if the waste contains more than one percent (>1%) friable asbestos. Some California Air Quality Management Districts (AQMD) have determined all the ash and commingled debris from a structural fire event should be managed as a California hazardous asbestos containing waste in accordance with the federal asbestos NESHAP and local air quality regulations. However, other air districts have not mandated this requirement and have cited the NESHAP exemption for single family homes. This has resulted in inconsistent cleanup and waste disposal practices for local governments and homeowners throughout the state.

Based on an assessment of structural burn debris from the 2003 and 2007 California Wildfires in San Bernardino and San Diego Counties, the ash and debris from burned residential structures can contain concentrated amounts of heavy metals, such as antimony, arsenic, cadmium, copper, lead, and zinc that can pose a health risk. The residual materials may also contain other chemicals of concern, such as polycyclic aromatic hydrocarbons (PAHs), chlorinated polycyclic aromatic hydrocarbons, and occasionally asbestos. Asbestos containing building materials (ACM) can include stucco, roofing, floor tile, fireplace insulation, furnaces, wall insulation (e.g. vermiculite), acoustical treatments, sheetrock, joint compound, construction adhesives, vapor barriers, pipe wraps, electrical wiring insulation, and other common building materials.

Results from air and bulk ash samples collected during previous wildfires and the 2010San Bruno natural gas pipeline explosion reveal that asbestos fibers from building materials containing asbestos may be consumed and the remnants dispersed into the thermal column of the fire[2]. According to the local air quality management district, the homes impacted by the fire contained significant asbestos containing building materials.

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[2] San Bruno Debris Removal – Final Report, CA Dept. of Resources, Recycling and Recovery, February 2011. San Bruno Fire Letter Report to U.S. EPA, Ecology and Environment, November 19, 2011.

On-site air sampling for asbestos fibers during debris removal activities revealed 13 of 162 air samples contained asbestos; however, all asbestos air samples were below the Cal/OSHA permissible exposure limit (PEL) of 0.1 fiber/cubic centimeter, and transmission electron microscopy (TEM) analysis revealed only a few asbestos structures detected in any of the air samples collected along the property line at each residential lot.

In addition, results from community air sampling around the disaster site detected virtually no particulate matter or asbestos fibers during debris removal activities. Analytical results from samples collected of the burn ash revealed that asbestos fibers were not present above the DTSC or USEPA regulatory threshold of one percent. As further evidence of the fires destructive properties, only five out of 79 bulk building material samples contained asbestos greater than one percent (1%). These materials were primarily floor titles under the burn ash or in areas not exposed to extreme heat.

While the low concentrations of hazardous substances noted above are generally not classified as a California hazardous waste, they may pose an environmental and public health risk if the material is not properly handled or is allowed to enter the ecosystem. To protect the public from exposure to any potentially hazardous materials, and to reduce any environmental threats, consist handling and disposal practices and procedures should be implemented statewide.

4. Public Health Impacts from Disasters

There is a potential for widespread toxic exposures and threats to public health and the environment in the aftermath of major disasters. The health effects of hazardous substances releases following earthquakes, floods, and wildfires are well-documented. Exposure to hazardous substances may lead to acute and chronic health effects, and may potentially cause long-term public health and environmental impacts. Uncontrolled hazardous materials and debris pose significant threats to public health through inhalation of dust and particulates and contamination of drinking water supplies. It is critical that response efforts to address hazardous substance and debris removal are taken as quickly as possible to abate these impacts. State and local governments may need to enter private property to clear fire ash and debris, or to demolish and remove private structures made unsafe by disasters, to eliminate immediate threats to life, public health, and safety. Additional information on public health impacts from disasters can be found in Appendix B.

5. Conducting Emergency Removal Actions

During a local or state declaration of a State of Emergency, rapid response action is necessary to protect response personnel and the public from potential exposure to uncontrolled hazardous materials and substances. Previous disasters have demonstrated exposures to response personnel, and have shown that residents returning to their communities have encountered hazardous materials contained within the dust and debris. Without the proper identification, handling, and removal of hazardous materials and debris (including asbestos), the public will continue to be at the risk of exposure. Conducting emergency removal actions will mitigate threats posed by the uncontrolled hazardous substances that may be encountered from a natural or man-made disaster.

For the purposes of this guidance, ‑hazardous materials‖ is a general term intended to mean hazardous substances, pollutants, and contaminants as defined in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 CFR Part 300, and the California Health and Safety Code (HSC) § 25316. Hazardous materials include chemical substances, whether accidentally or intentionally released and because of

their quantity, concentrations, or physical or chemical characteristics, pose a significant present or potential hazard to human health and safety or to the environment if released into the community [HSC §25411(c) 3].

A –release‖ means any spilling, leaking, escaping, leaching, dumping, or disposing into the environment [HSC §25411(d)]. Public health, safety, and welfare may be endangered by airborne, waterborne, or soil releases of substances which are toxic or injurious to humans or the environment [HSC 39650(a)].

Standard operating procedures should be considered for the following residential and commercial areas when undertaking removal activities: health and safety of response and cleanup personnel; the assessment, containment, identification and removal of hazardous materials, asbestos containing materials (ACM), and household hazardous waste (HHW); air monitoring and air sampling during removal activities; waste classification; and, the transport and disposal of wastes.

a. Health and Safety

Before conducting assessment and removal activities, and to the extent possible, the site should be rendered safe from all structural hazards posed by partially collapsed buildings, electrical line, fall hazards, etc.

A site-specific Heath and Safety Plan (HASP) must be developed which meets the Occupational Safety and Health Administration (OSHA) requirement of 29 CFR 1910.120, Hazardous Waste Operations (HAZWOPER), and Title 8, Section 5192 of the California Code of Regulations (CCR).

All elements required by 29 CFR 1910.120 and CCR Title 8, Section 5192, should be thoroughly discussed in the HASP. These elements should address hazardous waste operations and emergency response and include: a health and safety program; site characterization and analysis; site control; personnel training requirements; medical surveillance; engineering control work practices; personal protective equipment (PPE) for employee protection; air monitoring; and, decontamination. The goal is to produce a site-specific safety plan that covers all activities being conducted for all personnel entering the site.

Additionally, a community safety plan may be necessary to meet the Community Right-To-Know Act due to the nature of the ash and debris. A community health and safety plan can help increase the public's knowledge and access to the information on the debris removal and the related hazards. This information will help protect the public health and the environment.

b. Hazardous Materials Assessment and Removal

Standard operating procedures for conducting hazardous material (hazmat) assessment activities should be followed pursuant to CalOSHA and OSHA HAZWOPER requirements noted In Section 5a above.

Prior to commencing debris removal activities, all areas are to be cleared of hazardous materials, including the removal of easily identifiable (visible) gross asbestos, radioactive, and explosive materials. Explosive material includes firearms and ammunition, black powder, blasting caps, some fireworks, and military ordinance. If explosive materials are identified on-site, they should be handled by trained personnel and removed immediately to ensure safety of the public. If local agencies are unable to address explosive materials through their cleanup contract resources, contact the local law enforcement authority to provide assistance.

Prior to the removal of hazardous materials and household hazardous wastes (HHW) a California Division of Occupational Safety and Health (DOSH) Certified Asbestos Consultant (CAC) should assess and sample all residential, and other affected areas of the site, to identify and remove gross asbestos. This is to ensure that any areas identified as containing gross asbestos material will not be disturbed by hazardous materials cleanup personnel. Any ACM that is not found on the ground due to natural forces may be subject to the NESHAP requirement. Once the removal of easily identifiable gross asbestos has been completed, hazardous material and HHW may be identified, segregated, classified, and properly removed from the site.

Initial hazmat assessment activities must include screening for radioactivity and ensuring that a flammable atmosphere does not exist. Typical hazardous materials include HHW such as: automotive/marine batteries; automotive oils and fuel; compressed gas cylinders; propane tanks; herbicides and pesticides; solvents, paint thinners and strippers; oil and latex-based paints; and pool chemicals.

c. Air Monitoring and Surveillance

Both onsite (industrial hygiene) and offsite (community based) air monitoring should be considered when planning debris removal operations for disaster recovery. A community based air monitoring program may be especially

important if there are elevated concerns about the impact to the surrounding community from recovery operations.

Onsite Air Monitoring

An onsite (industrial hygiene) air monitoring program is defined as one conducted within the immediate debris removal area with the objective of protecting occupational health and quantifying dust mitigation practices.

Community Based (Offsite) Air Monitoring

No off-site migration and/or emission of dust or airborne contaminants is expected from disaster debris removal operations when appropriate dust mitigation controls are in place, as recently demonstrated during recovery operations following the 2010 San Bruno natural gas pipeline explosion. However, a community based air monitoring program may be established to monitor offsite migration of airborne contaminants, especially if adjacent neighborhoods are reoccupied. Sampling or monitoring can also target sensitive population centers or locations such as schools and hospitals. While community monitoring is not required during disaster recovery efforts, increased community sensitivity following a disaster may justify a monitoring program.

Please see Section 5, Best Management Practices, below for guidance on performing air monitoring and sampling during debris and hazardous material removal operations.

d. Waste Classification

Because the debris, burn ash, and other wastes identified during cleanup activities may include asbestos, as well as, heavy metals such as mercury or copper, federal regulations such as the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), and the NESHAP may be applicable. Any State regulations that are more stringent than the federal requirements may be applicable to conducting the cleanup. Local agencies undertaking the removal action should consult with their state counterparts to identify any regulations that may apply if they have not be suspended or waived under the emergency proclamation.

In conducting removal activities as a result of a disaster or large scale incident, the local or state agency that is undertaking the action may be considered the ―lead agency.‖ The lead agency shall be responsible for the proper identification and classification of wastes generated during the cleanup. Waste streams are generally characterized through sampling and analysis, although some wastes can be identified through standard industrial and commercial processes.

In classifying waste streams, it must be determined whether a material is a waste or a product. This determination is important for establishing requirements for disposition of the material. To make this determination, two questions must be answered:

(1) What is the material composed of (for example, spent solvent, tires, commercial product, or wastewater, etc.)?

(2) What is, or has been, done with the material (for example, generated or produced, disposed of, or recycled)?

RCRA, 40 CFR § 261.2 defines a solid waste as any material that is abandoned or recycled or is inherently waste-like. When this determination is used to characterize waste streams during a cleanup, it is sometimes referred to as ―generators knowledge of the waste.‖

Some waste streams from wildfires and other natural disasters may be considered ―special waste‖ similar to those classified as universal wastes. This classification would require the burn ash and debris to be disposed and handled in a manner that is protective of both environment and public health.

NESHAP landfill requirements are separate from the Resource Conservation and Recovery Act (RCRA) solid waste regulations and state or local permit requirements. To determine if the material falls within the NESHAP requirements for disposal, the material must contain greater than1% asbestos identified by the polarized light microscopy (PLM) method. Asbestos-containing waste material (ACWM) can only be disposed of in a landfill that meets the Asbestos NESHAP requirements. Non-friable asbestos which will not be made friable through such demolition or renovation activities as sanding or grinding do not have to comply with these disposal requirements. Asbestos-containing material is also subject to state and local solid waste regulations. During an emergency, local or state proclamations of a State of Emergency may suspend or waive requirements for landfill disposal facilities.

If a waste stream is characterized as non-hazardous waste through analytical results, or the generators knowledge of the waste, consideration could be given to transport and dispose of the waste stream as non-hazardous asbestos containing waste. This classification will ensure the burn ash and debris generated after a disaster is properly handled to protect all on-site and disposal facility personnel, waste haulers, and landfill operators are aware of the potential risk of exposure to the waste stream.

e. Transport and Disposal

The lead agency for undertaking the emergency removal actions must ensure compliance with applicable federal and state laws and regulations for transportation and disposal. A representative for the lead agency or generator must sign manifests for shipping solid and hazardous waste off site.

There is no Federal requirement to complete a RCRA hazardous waste shipment record for asbestos. The California Hazardous Waste Manifest (CHWM) would meet all of the requirements of the Asbestos NESHAP Waste Shipment Record (WSR). However, to use only the CHWM for shipping ACM waste, the following information must be added to the form:

1. Facility name and address where the waste is generated.
2. Facility owner name and telephone number (if different from generator).
3. Local District, state, an USEPA Regional office responsible for implementing the NESHAP regulation.
4. Quantity of material described in cubic yards.
5. Description/breakdown of material in friable and non-friable form.
6. Transporters address and telephone number.

Disposal of waste should be placed within a landfill cell that does not contain municipal or general garbage (sanitary waste). The pH of waste found in cells containing sanitary waste can be acidic and react and create ―off-gassing‖ of hazardous materials.

f. Post Removal Site Control

When removal actions have been completed by a local or state agency, control of the affected property will be returned to the property owner. During the transition, the local or state agency that conducted the cleanup will provide the

owner with a checklist of actions that have been completed and what activities remain (see Appendix H). Post removal site control (PRSC) includes actions necessary to ensure the effectiveness and integrity of the removal action. Post removal site control may also be conducted by local or state authorities, property owners, responsible parties, or the federal government. Post removal site control may also include institutional controls to restrict activities if hazardous substances remain that may present a long term health or environmental effect. Examples of institutional controls include: land or resource use; deed restrictions; well-drilling prohibitions; building permits; and, well use advisories. If no commitment is made to conduct PRSC, site conditions could worsen causing a release or threat to public health and the environment.

6. Best Management Practices

The following Best Management Practices should be utilized when undertaking removal actions pursuant to a declared State of Emergency. These BMPs should be undertaken to address the removal of hazardous materials, household hazardous waste (HHW), debris, asbestos containing materials (ACM's), and air monitoring and sampling from the disaster or incident site. Use of BMPs will also ensure the proper management and removal of hazardous materials, debris, burn ash, and other asbestos containing materials in a manner that ensures protection of public health and the environment, as well as, ensuring the health and safety of on-site personnel.

a. Health and Safety

1. It is recommended that all on-site cleanup personnel entering the exclusion zone must be 40-hour HAZWOPER trained Under 29 CFR 1910.120, and CCR Title 8, Section 5192, and will be required to wear Level C PPE.
2. A full time heath and safety officer will be assigned to the project. It is recommended that the health and safety officer be a certified industrial hygienist (CIH).
3. Depending on the task and activity, all cleanup contractors' working on-site must have the following certifications and licenses:
    a. State Contractor's License – Must include an asbestos certification component (If conducting ACM removal), and general engineering, demolition and hazardous substance certifications depending on the task performed.
    b. Department of Occupational Safety & Health Asbestos Registration Number (If conducting ACM removal).
    c. Hazardous Waste Transporter Registration Number – Issued by CA Department of Toxic Substances Control
    d. RCRA EPA ID Number – Issued by USEPA, Region 9
    e. USDOT, Pipeline and Hazardous Materials Safety Administration - Hazardous Material Certificate of Registration
    f. California Highway Patrol - Hazardous Materials Transportation License
    g. USDOT, Federal Motor Carrier Safety Administration - USDOT Identification Number
    h. California DMV – Motor Carrier permit

b. Hazardous Materials and Household Hazardous Waste (HHW)

1. The property, site or affected area of the disaster should be assessed for hazardous materials and household hazardous waste.
2. A Cal/OSHA Certified Asbestos Consultant (CAC) will be utilized to assess the area or each residential or commercial property for easily identifiable and removable pieces of ACM. After assessing each property or area, the CAC will consult with a licensed asbestos removal contractor to identify the location and area of ACM to be removed.
3. A Cal/OSHA certified Asbestos Removal Contractor will be responsible for overseeing the safe removal of ACM identified on-site by the CAC.
4. All on-site personnel working to remove ACM must have received the necessary health and safety training for conducting asbestos removal activities pursuant to OSHA 1910.100, and CCR Title 8, Section 5192, and will be required to wear Level C PPE when working in the exclusion zone.
5. All gross ACM that can easily be removed from the site will be adequately wetted prior to being bagged or bulked for removal. The easily identifiable gross ACM can be double-bagged and appropriately labeled as ACM. (At a minimum the plastic bags must be of at least 6-mil thickness.)
6. If bulk loading of ACM is utilized, the bin or container used for transport (e.g. end-dump trailer or roll-off box) shall be double-lined with 10-mil ploy in such a way that once loaded both layers can be sealed up independently.
7. HHW and hazardous materials identified on-site will be characterized, segregated, staged, consolidated, and packaged for transport and disposal by a licensed environmental contractor.
8. As noted in Sub-Section a. Health and Safety (above), all on-site cleanup personnel must be 40-hour HAZWOPER trained Under 29 CFR 1910.120, and CCR Title 8, Section 5192.
9. All hazardous waste and HHW removed from the site will be manifested and transported to a permitted treatment, storage, and disposal facility in good standing with local, state, and federal agencies.
10. Disposal facility emergency waivers and suspension of regulations for disposing of hazardous wastes generated from a disaster or large scale event must be coordinated with the local enforcement agency (LEA) and Regional Water Quality Control Board.

c. Debris and Asbestos Containing Material (ACM)

If the burn ash or building material on the ground is from structures completely destroyed by natural forces (as opposed to structures demolished in whole or in part by human activity), this material is not subject to the

Asbestos NESHAP as it relates to the demolition and renovation, transport and disposal requirements. If the building material and debris is not completely destroyed and requires further demolition, it may be subject to the Asbestos NESHAP.

At a minimum, the flowing BMPs should be used for undertaking debris removal activities:

1. A California DOSH Certified Asbestos Consultant (CAC) will be utilized to assess the area or each residential or commercial property for easily identifiable and removable pieces of ACM. After assessing each property or area, the CAC will consult with a licensed asbestos removal contractor to identify the location and area of ACM to be removed.
2. A Cal/OSHA registered Asbestos Removal Contractor will be responsible for overseeing the safe removal of ACM identified on-site by the CAC.
3. All on-site personnel working to remove ACM must have received the necessary health and safety training for conducting asbestos removal activities pursuant to OSHA 1910.100, and CCR Title 8, Section 5192, and will be required to wear Level C PPE when working in the exclusion zone.
4. As noted in Sub-Section a. Health and Safety (above), all on-site cleanup personnel must be 40-hour HAZWOPER trained Under 29 CFR 1910.120, and CCR Title 8, Section 5192.
5. The affected disaster or incident area (commercial, residential, or rural properties) will be screened by a CAC to identify all gross ACM that can be easily removed from the ground or structure prior to debris removal activities.
6. Request an asbestos consultation from the state or local AQMD for any structure that is not completely destroyed or for any structure with vermiculite insulation, for large –facility‖ components or material that will be broken up upon movement, or for other asbestos issues as identified by the CAC. Note: Current field definition of destroyed means the structure does not have a roof or any load bearing walls.
7. During asbestos screening process, it is recommended that bulk samples be collected from 10 to 20 percent of the representative structures that have not been destroyed to determine the presence of ACM above NESHAP regulations, and to ensure residual building

materials do not contain asbestos that may change the overall waste classification.

8. All gross ACM that can be safely and easily removed from the site will be adequately wetted prior to being bagged or burrito wrapped to meet the NESHAP leak-tight requirement for removal. The easily identifiable gross ACM can be double-bagged and appropriately labeled as ACM. (At a minimum the plastic bags must be of at least 6-mil thickness, and the contents must remain wet.)
9. If bulk loading of ACM is utilized, the bin or container used for transport (e.g. end-dump trailer or roll-off box) shall be double-lined with 10-mil ploy in such a way that once loaded both layers can be sealed up independently.
10. Conduct on-site and off-site air monitoring and sampling for asbestos and heavy metals during all ACM and debris removal operations to demonstrate the effectiveness of engineering controls to protect cleanup personnel and the surrounding community.
11. Engineering controls must be utilized to maintain dust and fiber control during removal activities. A water fog must be used during debris handling, bulking/bagging, and waste loading operations. It is recommended that cleanup contractors will use fire grade firefighting nozzles with shut off valves for dust control. The fire nozzle shall have sufficient water pressure to generate a high mist fog stream. The fire nozzle should have an adjustable flow rate, preferably 20 to 60 gallons per minute, and constructed of hard coated aluminum with brass and stainless steel internal components. Plastic nozzles should not be used. While the costs of metal firefighting nozzles are significantly more than plastic nozzles, metal nozzles are only able to generate a sufficient fog to control dust.
12. All burn ash and debris must be sufficiently wetted 48 to 72 hours in advance of initiating removal of the material. The water shall be applied in a manner so not to generate significant runoff. Engineering controls for storm water discharges must be in place prior to dust control operations.
13. All waste material that is not loaded out at the end of each workday should be stockpiled, sufficiently wetted, and/or covered to prevent the offsite migration of contaminants.
14. All waste haulers who observe loading operations outside of the vehicle cab, and/or covering (e.g. tarping) the trailer or container must wear Level C PPE.

15. All approved landfill operators that may come in contact with the waste during off-loading operations should follow their facilities protocols for wearing PPE and respiratory protection.
16. All ACM and debris removed from the property, site or area must be manifested and transported for disposal to a permitted treatment, storage, and disposal facility in good standing with local, state, and federal agencies.
17. Cal/OSHA may require procedures for the receiving landfill facility to establish an appropriate site safety plan for the protection of the facility employees to potential ACM in the waste stream.
18. Disposal facility emergency waivers, and suspension of regulations for disposing of wastes generated from a disaster or large scale event, must be coordinated with the local enforcement agency and the Regional Water Quality Control Board.

d. Air Monitoring and Sampling

To demonstrate the effectiveness of BMPs and the engineering controls used during emergency debris removal actions, air monitoring and sampling activities should be conducted in the exclusion zone (on-site) and along the perimeter of the site (community-based) during removal activities, as well as non-work hours to establish relevant background air pollution levels.

On-Site Monitoring and Sampling

1. Document onsite air monitoring activities in a Site-Specific Health and Safety Plan (HASP).
2. All personnel entering the immediate removal area should be required to wear Level C PPE, as defined in CCR Title 8 Section 5192; this level of PPE may be downgraded based on results of industrial hygiene air sampling.
3. Sample/monitor for dust, heavy metals, and asbestos. Particulate matter monitoring shall be done by direct reading instruments for real-time analysis. Heavy metal sampling can be conducted via cartridge or filter analysis using National Institute for Occupational Safety and Health (NIOSH) Method 7300 (metal scan). Asbestos samples should be collected with a 50mm antistatic cowel on a 25mm MCEF cassette and analyzed by transmission electron microscopy (TEM) NIOSH Method 7402 (high volume).
4. Collect at least one upwind and two downwind dust samples from the immediate debris removal area in a triangular configuration.

5. Personal air sampling collected in the breathing zone of site cleanup workers should be conducted for dust, heavy metals, and asbestos; Sampling can be representative rather than comprehensive so long as monitored personnel represent of various onsite operators, laborers, and supervisors.
6. The onsite air monitoring program shall include steps to modify debris removal operations to reduce the potential for exposures above the NIOSH Recommended Exposure Limits, the Threshold Limit Values published by the American Conference of Governmental Industrial Hygienists (ACGIH), or other protective occupational health guidance used in the site specific HASP.
7. It is recommended that a full-time safety officer be assigned to the removal operations, preferably a certified industrial hygienist (CIH).
8. At the conclusion of the debris removal project, a summary of air monitoring activities and any resulting health and safety issues should be provided to the project manager or Operations Chief.

Off-site (Community-Based) Monitoring and Sampling

1. Coordinate any monitoring and sampling efforts with county environmental health departments and local Air Quality Management Districts. Additional State and federal resources are available if local resources are unavailable or exhausted. The favored approach is an interagency effort with either the Air District or local health department as the lead agency.
2. Develop a Sampling Plan and document community monitoring activities in a Community Health and Safety Plan.
3. Monitoring may be for particulate matter alone or in combination with asbestos or other suspected contaminants. Particulate matter can serve as a proxy for the migration of other particulate-type airborne contaminants, but not gases and aerosols, which need separate monitoring.
4. Direct read or near real-time dust measurement instrumentation such as a data ram is preferred and allows immediate feedback to removal operations and to impacted communities.
5. If instituted, community monitoring should be conducted in both upwind and downwind locations relative to debris removal operations and/or the immediate impacted area.
6. Occupational health recommendations cannot be used in determining risk to public health. Only public health guidance values can be used to interpret community monitoring data.
7. Twenty-four hour average particulate matter concentrations ($PM_{2.5}$ or PM_{10}) should be equal to or less than 35 $\mu g/m^3$; 8-hr averages should be

equal to or less than 50 µg/m^3; and, 3hr averages should be equal to or less than 88 µg/m^3.[3]

8. Public health guidance values for other airborne contaminants are available from the Office of Environmental Health Hazard Assessment (http://oehha.ca.gov/air/allrels.html) or from the US Environmental Protection Agency provisional advisory levels (http://oaspub.epa.gov/eims/eimscomm.getfile?p_download_id=500613).

e. Storm Water Controls

One of the most prevalent water pollution threats from burn sites is the discharge of ash and other burn related debris into storm drains or natural receiving waters. Sites where debris and ash have been removed are often graded and have soils prepared similar to those of construction projects. Debris removal and site clearing activities increase the exposure of soils to wind, rain, and concentrated flows that cause erosion and adversely impact storm water quality with high levels of total suspended solids (TDS) and many other pollutants, which subsequently impacts surface waters.

The main objective is to provide BMPs that stabilize disturbed soil and reduce sediment transport caused by erosion from entering a storm drain system or receiving water body during debris removal after a disaster. BMPs for storm water controls may include the use of fiber rolls, silt fences, erosion control blankets, hydro seeding, soil binders, and other devices to reduce sediments. Effort should be made to preserve existing vegetation, if practicable. Once the removal has been completed, operation and maintenance of storm water control measures must be maintained by the property owner or the local government. Please see Appendix F, Storm Water Controls, for specific information on the application of BMPs for storm water control.

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[3] References:
National Ambient Air Quality Standards for Particulate Matter Final Rule, October 17, 2006
Revising the Air Quality Index and Setting a Significant Harm Level for PM2.5, February 12, 2007, US EPA Office of Air Quality Planning and Standards, www.epa.gov/airnow/aqi_issue_paper_020707.pdf
Wildfire Smoke: A Guide for Public Health Officials, Revised July 2008, www.arb.ca.gov/carpa/docs/wildfire-smoke-guide.pdf

Appendix A – Glossary

Below is a list of acronyms and terms, and their associated definitions.

AAR – After Action Report

ACM – Asbestos Containing Material

ACWM – Asbestos Containing Waste Material

ACGIH – American Conference of Governmental Industrial Hygienists

AQMD – Air Quality Management District

ARB – Air Resources Board

BDO – Boards, Departments and Offices

BMP – Best Management Practices

CAC – Certified Asbestos Contractor

Cal EMA – California Emergency Management Agency

Cal/EPA – California Environmental Protection Agency

Cal Fire – California Department of Forestry and Fire Protection

Cal/OSHA – California Occupational Safety and Health Administration

CalTrans – California Department of Transportation

CAPCOA – California Air Pollution Controls Officers Association

CCR – California Code of Regulations

CDPH – California Department of Public Health

CERCLA - Comprehensive Environmental Response, Compensation and Liability Act

CFR – Code of Federal Regulations

CHWM – California Hazardous Waste Manifest

CIH – Certified Industrial Hygeinist

CSWC – California State Warning Center

DEH – Department of Environmental Health

DMV – Department of Motor Vehicles

DOSH – Division of Occupational Safety and Health

DPR – California Department of Pesticide Regulation

DRRR – California Department of Resource Recovery and Recycling (Cal Recycle)

DTSC – California Department of Toxic Substances Control

DW – Drinking Water

EF – Emergency Function

EOC – Emergency Operations Center

ERMaC – California Emergency Response Management Committee

HASP – Health and Safety Plan

HAZMAT – Hazardous Materials

HHW – Household Hazardous Waste

HSC – California Health and Safety Code

ICS – Incident Command System

LEA – Local Solid Waste Enforcement Agency

MAC–G - Multi-agency Coordination Group

NESHAP – National Emission Standards for Hazardous Air Pollutants

NIOSH - National Institute for Occupational Safety and Health

OEHHA – California Office of Environmental Health Hazard Assessment

PLM – Polarized Light Microscopy

PPE – Personal Protective Equipment

RCRA – Resource Conservation and Recovery Act

RWQCB - Regional Water Quality Control Board

SEMS – Standardized Emergency Management System

SOG – Standard Operating Guides

SWRCB – State Water Resources Control Board

US DOT – United States Department of Transportation

WSR – Waste Shipment Record

USEPA – United States Environmental Protection Agency

Appendix B - Public Health Impacts of Recent California Disasters

There is a potential for widespread toxic exposures and threats to public health and the environment in the aftermath of major disasters. The health effects of hazardous substances releases following earthquakes, floods, and wildfires are well-documented. Some exposures may lead to acute health effects, while releases of hazardous substances may potentially cause long-term public health and environmental impacts. In general, CalEPA use the inherent hazards and extent of toxic releases to guide its emergency response and recovery efforts.

For example, residents returning to a neighborhood destroyed in a wildfire may be exposed to contaminants in debris and ash via dermal and inhalation exposure, both of which may result in adverse health effects. Contaminants may also pose an occupational health risk for recovery and public safety workers deployed to the area, as well risk to surface water and groundwater quality. Constituents of concern in burned debris include:

- Metal residue from batteries, treated wood, melted plumbing, building materials, and automobiles;
- Pesticides and herbicides from lawn, garden, and home products;
- Polycyclic aromatic hydrocarbons (PAHs) including dioxins and furans from burned tires, plastics, and substances containing hydrocarbons;
- Asbestos from building materials, insulation, flooring, and roofing materials, especially in older homes;
- Polychlorinated biphenyls (PCBs) from appliances, transformers, and automotive parts;
- Solvents, paints, fuels such as propane, and pool chemicals.

Removal of fire ash and debris is in the public interest because it can significantly reduce or eliminate immediate threats to life, public health or safety.

A. Threats to Drinking Water Supplies following Wildfires

Drinking water supplies are subject to decrements in quality from deposition of toxics following wildland and residential fires. Particulate matter and ash are easily dispersed by wind and, depending on particle size, may deposit directly into the water or may fall out of the sky with precipitation. Likewise, any surface runoff, including storm drain effluent from burned areas, may result in contaminated surface water. This runoff can contaminate streams that feed drinking water reservoirs, and ultimately affect the water quality of the reservoirs themselves. In addition, groundwater is at risk from

contamination from toxic chemicals from the burned areas as they migrate into the aquifers that supply drinking water wells. Such uncontrolled contamination of drinking water supplies can affect hundreds of thousands of residents who rely on clean public drinking water sources.

The impacts of fire ash on water quality are well-known. Fire ash contamination can result in elevated turbidity levels in surface water, creating problems with filtration and disinfection. Ash can impact the pH of the drinking water supply, making it more difficult to remove the turbidity from the water supply through required water quality treatments. Destruction of surrounding vegetation may result in soil erosion during rain storms, thus creating an ongoing turbidity and debris problems in the water treatment plants. In addition, ash contains heavy metals, such as arsenic and lead, which have drinking water standards which will likely be exceeded because of runoff.

Analytical results from the Drinking Water Branch of the California Department of Health showed that contaminant levels rose dramatically in several drinking water reservoirs that serve the San Diego are following the 2003 Cedar and Paradise Fires. One week following the 2003 fires, arsenic concentrations rose to 29.9 parts per billion (29.9 ppb), three times the maximum contaminant level (MCL) of 10 ppb in Sutherland Lake. Concentrations of manganese were over 1000 ppb, which was 20 times the MCL of 50 ppb. The El Capitan Reservoir and its surface water streams also showed significant contamination following the 2003 fires. Two weeks after the fire, concentrations of lead, arsenic, aluminum, barium, manganese, and vanadium in three streams upstream of the reservoir all exceeded the federal or California MCLs. In addition, beryllium, cadmium, and nickel concentrations all exceeded their respective public health goals (PHG). Following the first rain, aluminum concentrations were above 10,000 ppb, manganese concentrations were above 7000 ppb, and barium concentrations were above 3000 ppb, all exceeding their respective MCLs by several-fold.

Conditions were similar following the 2007 Southern California fires, where there was an increased risk of watershed contamination of drinking water reservoir in the rainy season following the October 2007 fires. However, because fire ash and debris were removed in San Diego County in a coordinated debris removal program, the drinking water supplies for San Diego were not impacted. This was a direct result of the quick action taken by the County and State in conducting debris removal activities.

Likewise, monitoring conducted by the San Francisco Bay Regional Water Quality Control Board found no increased contaminant levels in the San Bruno Creek in Crestmoor Canyon following the debris removal efforts as a result of the September 2010 PG&E natural gas explosion.

Therefore, fire ash and debris removal programs have been successful in protecting the watershed and any downstream public water supply reservoirs. In addition, removing debris following major disasters has the added benefit of protecting aquifers from any toxic material that, if left in place, may have leached through soils and into groundwater supplies.

B. Public Health Threats by Inhalation Exposure following Wildfires

Following the Cedar and Paradise Fires, the California Division of Occupational Safety and Health (Cal/OSHA) conducted personal monitoring for federal recovery staff and contractors working in burned residential areas. Using the ash characterization data from GeoSyntec Consultants along with the personal dust concentrations from Cal/OSHA monitoring, the Office of Environmental Health Hazard Assessment (OEHHA) calculated that the mean exposure of arsenic from fire ash by unprotected workers would have exceeded the acute reference exposure levels (RELs) for arsenic and copper. In addition, the Cal/OSHA action levels for lead and arsenic would have been exceeded for unprotected workers.

Not only is there the potential for exposures directly at the site of fire-damaged or destroyed properties, but the general air quality in the vicinity of ash-strewn areas is also a concern. Re-entrained ash was an issue following the 2003 fires, as see in the following satellite image. Winds blowing through wide areas of uncontained ash and debris resulted in significantly elevated concentrations of ambient particulate matter.

National Oceanic and Atmospheric Administration (NOAA) image, November 23, 2003, Southern California Ash (Entrainment) Plume.

The 2007 Southern California fires were second only to the Cedar and Paradise Fires of 2003 in terms of the unprecedented loss of residential properties in Southern California.

Not unique to these fires, however, was the widespread debris and ash which puts a large population at risk of potentially harmful exposures should they re-enter burned areas.

There were significant time delays in the approval of a coordinated debris removal plan in San Diego and San Bernardino Counties following the 2007 wildfires. As a result, resident returning to destroyed neighborhoods, as well as recovery workers in such areas, were again at risk of exposure to potential harmful materials from the fire ash and debris. With weather conditions favoring a warm, dry offshore flow and very windy conditions, on Friday November 2, 2007 the San Diego County Air Pollution Control District called for residents to exercise caution and protect themselves from ash inhalation. The Air District forecast was for air quality levels unhealthy for sensitive groups and recommended that county residents curtail strenuous outdoor activity, and for those healthy enough to work outside to consider using a tight-fitting mask designed to filter out fine particles.

Conditions following the 2010 San Bruno natural gas pipeline explosion were smaller in scale when compared to the 2003 and 2007 Southern California wildfires. However, the constituents in fire ash and debris were qualitatively similar, creating a public health risk to returning residents and the surrounding community. However, a debris removal plan was instituted quickly resulting is significantly decreased occupational and public health risks from the fire ash and debris off-site migration or re-entrainment. A comprehensive interagency onsite and offsite air monitoring program showed the dust mitigation techniques used in the debris removal process were successful in eliminating any increases in particulate matter offsite and in the nearby community. Likewise, no detectable asbestos fibers were found using community air samplers in the surrounding neighborhood (On-site structural ACM investigations verified ACM was present in partially damaged residential structures.). [4]

Conclusion

It is critical to the well-being of California residents that all ash and debris from affected areas properties be promptly removed and properly disposed of to eliminate further risk to public health and safety. A protracted decision-making process for the debris management only increases the likelihood to potential exposures to contamination and

[4] San Bruno, CA Gas Pipeline Explosion: Glenview Incident Report, California Air Resources Board, Emergency Response Team, February 2011 (available by contacting ARBs Office of Emergency Response at (916) 445-3742).

the resulting adverse health effects. In addition, when appropriate fire ash and debris removal procedures are undertaken, there are clear, significant, and demonstrated decreases to the risk of public health and environmental degradation.

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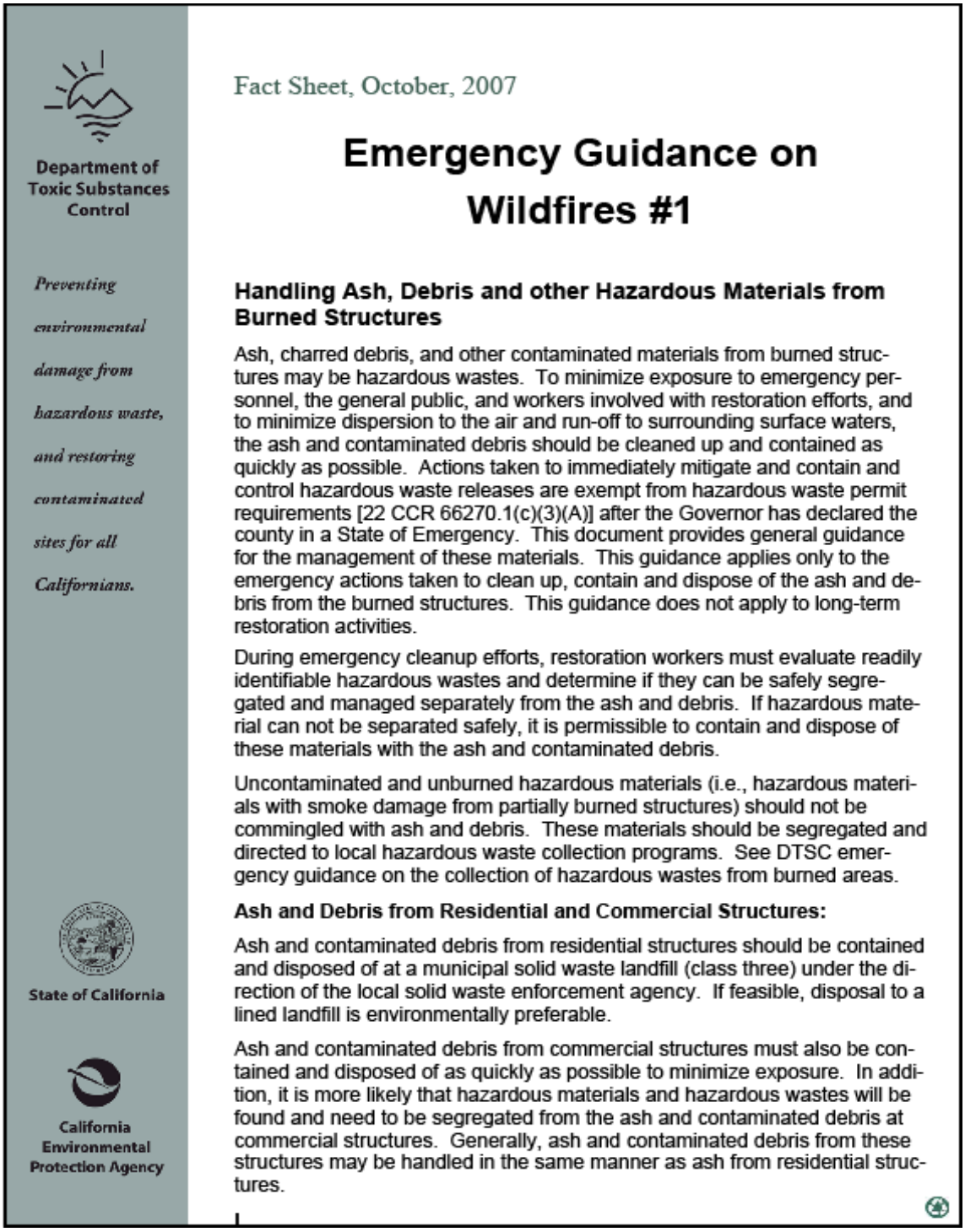
Appendix C – Department of Toxic Substances Control, Emergency Guidance on Wildfires, Fact Sheet #1



Department of Toxic Substances Control

Preventing environmental damage from hazardous waste, and restoring contaminated sites for all Californians.

State of California

California Environmental Protection Agency

Fact Sheet, October, 2007

Emergency Guidance on Wildfires #1

Handling Ash, Debris and other Hazardous Materials from Burned Structures

Ash, charred debris, and other contaminated materials from burned structures may be hazardous wastes. To minimize exposure to emergency personnel, the general public, and workers involved with restoration efforts, and to minimize dispersion to the air and run-off to surrounding surface waters, the ash and contaminated debris should be cleaned up and contained as quickly as possible. Actions taken to immediately mitigate and contain and control hazardous waste releases are exempt from hazardous waste permit requirements [22 CCR 66270.1(c)(3)(A)] after the Governor has declared the county in a State of Emergency. This document provides general guidance for the management of these materials. This guidance applies only to the emergency actions taken to clean up, contain and dispose of the ash and debris from the burned structures. This guidance does not apply to long-term restoration activities.

During emergency cleanup efforts, restoration workers must evaluate readily identifiable hazardous wastes and determine if they can be safely segregated and managed separately from the ash and debris. If hazardous material can not be separated safely, it is permissible to contain and dispose of these materials with the ash and contaminated debris.

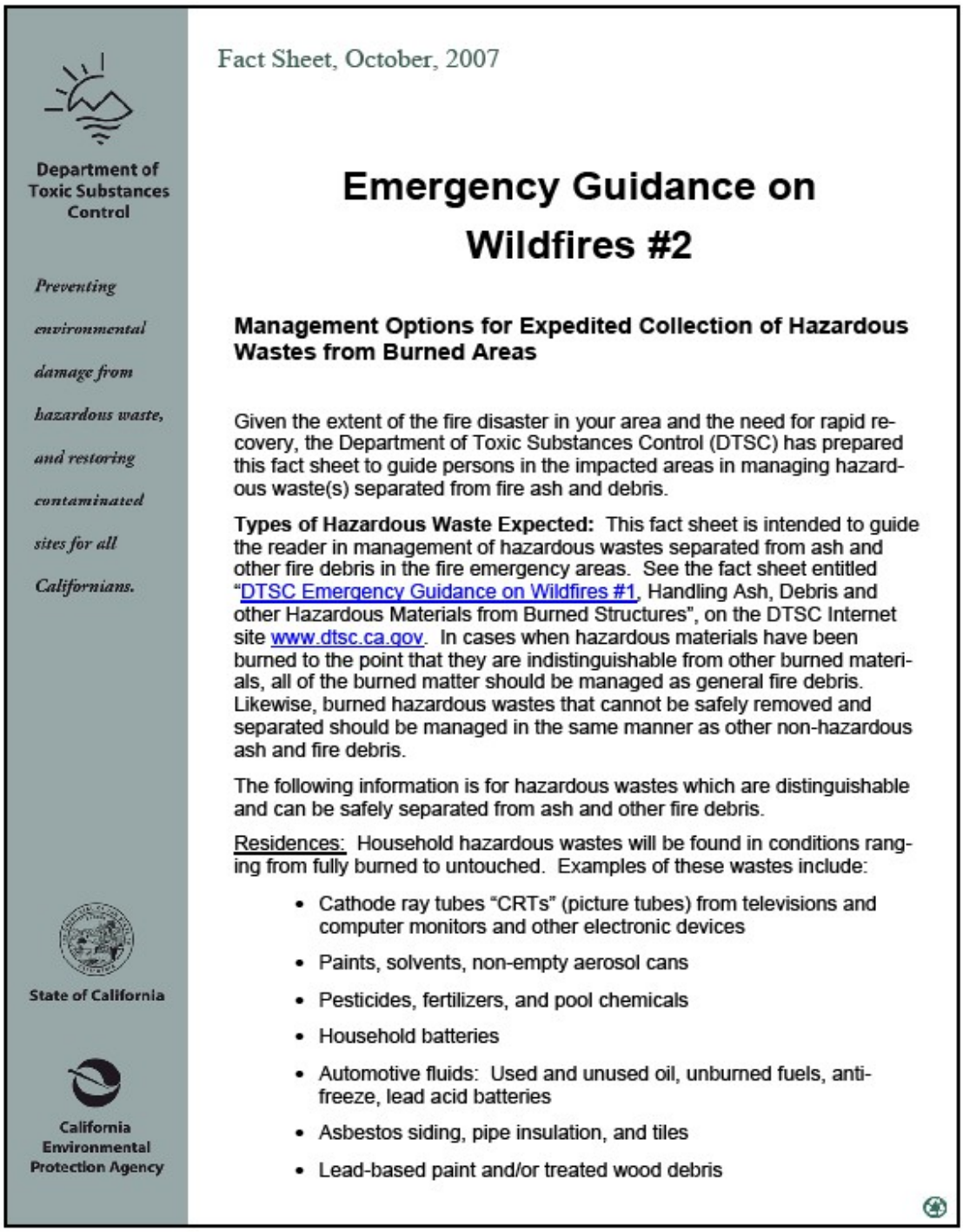
Uncontaminated and unburned hazardous materials (i.e., hazardous materials with smoke damage from partially burned structures) should not be commingled with ash and debris. These materials should be segregated and directed to local hazardous waste collection programs. See DTSC emergency guidance on the collection of hazardous wastes from burned areas.

Ash and Debris from Residential and Commercial Structures:

Ash and contaminated debris from residential structures should be contained and disposed of at a municipal solid waste landfill (class three) under the direction of the local solid waste enforcement agency. If feasible, disposal to a lined landfill is environmentally preferable.

Ash and contaminated debris from commercial structures must also be contained and disposed of as quickly as possible to minimize exposure. In addition, it is more likely that hazardous materials and hazardous wastes will be found and need to be segregated from the ash and contaminated debris at commercial structures. Generally, ash and contaminated debris from these structures may be handled in the same manner as ash from residential structures.

Appendix D – Department of Toxic Substances Control, Emergency Guidance on Wildfires, Fact Sheet #2



Department of Toxic Substances Control

Preventing environmental damage from hazardous waste, and restoring contaminated sites for all Californians.

State of California

California Environmental Protection Agency

Fact Sheet, October, 2007

Emergency Guidance on Wildfires #2

Management Options for Expedited Collection of Hazardous Wastes from Burned Areas

Given the extent of the fire disaster in your area and the need for rapid recovery, the Department of Toxic Substances Control (DTSC) has prepared this fact sheet to guide persons in the impacted areas in managing hazardous waste(s) separated from fire ash and debris.

Types of Hazardous Waste Expected: This fact sheet is intended to guide the reader in management of hazardous wastes separated from ash and other fire debris in the fire emergency areas. See the fact sheet entitled "DTSC Emergency Guidance on Wildfires #1, Handling Ash, Debris and other Hazardous Materials from Burned Structures", on the DTSC Internet site www.dtsc.ca.gov. In cases when hazardous materials have been burned to the point that they are indistinguishable from other burned materials, all of the burned matter should be managed as general fire debris. Likewise, burned hazardous wastes that cannot be safely removed and separated should be managed in the same manner as other non-hazardous ash and fire debris.

The following information is for hazardous wastes which are distinguishable and can be safely separated from ash and other fire debris.

Residences: Household hazardous wastes will be found in conditions ranging from fully burned to untouched. Examples of these wastes include:

- Cathode ray tubes "CRTs" (picture tubes) from televisions and computer monitors and other electronic devices
- Paints, solvents, non-empty aerosol cans
- Pesticides, fertilizers, and pool chemicals
- Household batteries
- Automotive fluids: Used and unused oil, unburned fuels, anti-freeze, lead acid batteries
- Asbestos siding, pipe insulation, and tiles
- Lead-based paint and/or treated wood debris

- Mercury-containing thermometers, gauges, and switches
- Compressed gas cylinders: Propane and LPG, oxygen, welding gases
- Ammunition and ammunition reloading supplies

Small businesses: Many small businesses are likely to have hazardous waste. Condition of the wastes will range from fully combusted to virtually undamaged. Potential hazardous materials that may be associated with various businesses include:

- Automotive service and supply businesses: Fluids including used and new oil, antifreeze, solvents, paints and thinners; lead-acid storage batteries.
- Pool chemical supply: Muriatic acid, oxidizers, chelating agents.
- Hardware and Home and Garden Supply: Paints, paint thinners, adhesives and strippers, batteries, solvents, cleaning products, pool chemicals, pesticides and fertilizers.
- General Businesses: CRTs from computers and security cameras, battery backup units, small electronic devices.
- Sporting goods: Ammunition, reloading supplies.

Industrial Businesses: Larger businesses that have been impacted must be examined on an individual basis. For further information, contact Karl Palmer at (916) 445-2625 or Charles Corcoran at (916) 327-4499.

General Waste Management: While removing debris, home and business owners should remove white goods (appliances), automobile bodies, and other recyclable materials to the extent that is practical in order to avoid filling disposal sites with large objects that can be recycled as scrap metal. Likewise, concrete and other inorganic wastes may be segregated and recycled as aggregate for new concrete. Contact you local solid waste agency for further information.

Contractor Duties: Firms clearing land under contract to homeowners or businesses have the same responsibilities for proper waste management under the law as the home and business owners. This fact sheet also applies to contractors.

Identification Number: A hazardous waste facility identification number will be issued and is to be used by household collection agencies and other government agencies (and their contractors) for shipping hazardous wastes generated in the disaster.

2. Management Options for Hazardous Wastes Removed from Debris:

Indistinguishable Hazardous Materials and Materials that cannot be Safely Separated from Other Ash and Fire Debris at Residential Properties and Small Businesses:

These materials should be managed along with the ash and other debris. They may be taken to a municipal solid waste landfill. Care should be taken to avoid generation of dust by misting and covering loads or using bins with lids. For further information, see the fact sheet entitled "DTSC Emergency Guidance on Wildfires #1, Ash, Debris and other Hazardous Materials from Burned Structures", on the DTSC Internet site www.dtsc.ca.gov.

2

Emergency Situations: Unstable situations may be addressed without any further authorization by removal or treatment of hazardous waste under the emergency response exemption from the usual hazardous waste permitting requirements (22 CCR 66270.1(c)(3)(A)). Under this exemption, released wastes may be cleaned up, wastes in damaged containers or tanks may be repackaged, and wastes that pose an imminent and substantial risk may be treated to remove the immediate hazard. Examples include, but are not limited to, pumping and repackaging of wastes from fire damaged tanks and neutralization of acids or alkalis contained in damaged tanks and containers. In emergencies such as the circumstances described here, no permit or other authorization is needed to take care of these wastes. There is also no notification required in these instances.

Universal Waste: Universal wastes expected to be found include non-automotive batteries, CRTs, fluorescent and streetlight-type lamps, mercury thermostats, and small electronic devices.

No authorization is needed to collect, transport, and accumulate universal wastes. Household hazardous waste collection agencies may collect these materials and may set up collection routes and locations without any additional authorization. The household hazardous waste collection agency is acting as a "small quantity handler of universal waste" (22, CCR, 66273.10 et seq.). To dispose of universal wastes, call the appropriate household hazardous waste agency. (See below)

Household Hazardous Waste: Household hazardous wastes are collected and managed by local household hazardous waste agencies.

Authorization for household hazardous waste collections: Both permanent and temporary household hazardous waste collection facilities are authorized by the appropriate Certified Unified Program Agency (CUPA), and can be authorized on an expedited basis if there is no previously authorized household hazardous waste collection facility in a particular area.

Special Household Hazardous Waste Programs: Household hazardous waste agencies can conduct mobile, door to door, and curbside collections in the affected areas upon issuance of a variance by DTSC from hazardous waste transporter and facility requirements. DTSC will expedite variance approvals for affected areas as needed and as appropriate. Please call André Algazi at (916) 324-3114. If you have an emergency situation after hours that must be handled immediately, call the CUPA if they have a 24-hour number or contact the State Office of Emergency Services (OES) Warning Center at 1(800) 852-7550 for 24 hour response; the OES Warning Center will pass the information on to DTSC as quickly as possible.

Small Business Hazardous Waste: State law allows small businesses to bring hazardous waste to household hazardous waste collection facilities as "small quantity commercial sources". The wastes may be self-transported in small quantities, transported by a registered hazardous waste hauler, or transported by a collection agency that has received a variance from the hazardous waste transportation requirements. For a local agency to obtain such a variance, see "Special Household Hazardous Waste Programs" above.

3

Industrial Hazardous Waste:

Industrial generators of hazardous waste have at least 90 days to store hazardous waste onsite in tanks or containers prior to offsite shipment. Extensions are possible – contact the appropriate CUPA to request an extension to the allowed accumulation time. Imminent hazards may be addressed without authorization under the emergency response exemption– see "Emergency Situations" above.

Emergency Permits: If special accumulation, treatment, or storage facilities must be established to respond to wastes from industrial businesses, DTSC is authorized to issue emergency hazardous waste facility permits over the telephone followed by the subsequent formal authorization process (22 CCR, 66270.61). For further information, please call Beverly Rikala at (916) 255-3746 from 8:00am to 5:00pm. If you have an emergency situation after hours, call the OES Warning Center at (800) 852-7550 for 24 hour response; the warning center will pass the information on to DTSC as quickly as possible.

DTSC Emergency Response Resources: Upon request by a state or local agency, DTSC may dispatch emergency response contractors to address imminent hazards. Local agencies should follow procedures in place for requesting emergency assistance in disaster situations, e.g. the county must contact the OES Regional Emergency Operations Center and request assistance.

Requests for Assistance: In general, all requests for assistance should be made through the County to the OES REOC to ensure that reimbursement is available for the activity. These requests will be forwarded to the appropriate State agency.

3. Contacts: Following are contacts for hazardous waste agencies:

DTSC Contact Information:

Karl Palmer (916) 445-2625
kpalmer@dtsc.ca.gov

Certified Unified Program Agencies:

http://www.calepa.ca.gov/CUPA/CUPAMail.htm

California Office of Emergency Services Warning Center: (800) 852-7550

4

Appendix E – Department of Toxic Substances Control, Emergency Ash Cleanup Guidance

Safe Cleanup of Fire Ash

The recent fires have deposited large amounts of ash on indoor and outdoor surfaces in areas near the fire. Questions have been raised about possible dangers from contact with the ash and safe disposal procedures. The ash deposited by forest fires is relatively nontoxic and similar to ash that might be found in your fireplace. However, any ash will contain small amounts of cancer-causing chemicals. In addition, fire ash may be irritating to the skin, especially to those with sensitive skin. If the ash is breathed, it can be irritating to the nose and throat and may cause coughing. Exposure to ash in air might trigger asthmatic attacks in people who already have asthma. Therefore, in order to avoid possible health problems the following is recommended:

- Do not allow children to play in the ash, or in the vicinity of ash dust.
- Wash ash off children's toys before children play with them.
- Clean ash off house pets.
- Wear gloves, long sleeved shirts, and long pants and avoid skin contact.
- If you do get ash on your skin, wash it off as soon as possible.
- If you have a vegetable garden or fruit trees, wash the fruit or vegetables thoroughly before eating them.
- Avoid getting ash into the air as much as possible. Do not use leaf blowers or take other actions that will put ash into the air.
- Shop vacuums and other common vacuum cleaners do not filter out small particles, but rather blow such particles out the exhaust into the air where they can be breathed. The use of shop vacuums and other non-HEPA filter vacuums is not recommended. HEPA filter vacuums could be used, if available.
- Well fitting dust masks may provide some protection during cleanup. A mask rated N-95 or P-100 will be more effective than simpler dust or surgical masks in blocking particles from ash. In general, many ash particles are larger than those found in smoke; thus, wearing a dust mask can significantly reduce (but not completely eliminate) the amount of particles inhaled.

• Persons with heart or lung disease should consult their physician before using a mask during post-fire cleanup.

• Gentle sweeping of indoor and outdoor hard surfaces followed by wet mopping is the best procedure in most cases. A damp cloth or wet mop may be all that is needed on lightly dusted areas.

• The Regional Water Control Quality Board has asked the public to avoid washing ash into storm drains whenever possible.

• If ash is wet down, use as little water as possible.

• Collected ash may be disposed of in the regular trash. Ash may be stored in plastic bags or other containers that will prevent it from being disturbed.

Ash and debris inside burned structures may contain more toxic substances than forest fire ash because of the many synthetic and other materials present in buildings. Older buildings in particular may contain asbestos and lead. A more cautious approach should be taken in the removal of ash and other debris from inside burned structures. A NIOSH Interim fact sheet addressing burned structure clean up safety is attached.

NIOSH INTERIM FACT SHEET

NIOSH Warns of Hazards during Cleanup Work Following Forest Fires The National Institute for Occupational Safety and Health (NIOSH) warns workers and volunteers of the potential dangers involved with cleanup operations following the devastation caused by forest fires. Because the level of experience varies among these workers, cleanup crews must work together and look out for one another to ensure safety. NIOSH urgently requests your assistance in disseminating the following warnings to all those involved in cleanup work following forest fires. The potential work-related hazards listed here are described below in greater detail: Fire, Electrical Hazards, Carbon Monoxide, Musculoskeletal Hazards, Thermal Stresses, Heavy Equipment, Structural Instability, Hazardous Materials, Confined Spaces, Power Line Hazards, Agricultural Hazards, Stress and Fatigue. Additional key resources on health and safety hazards related to fire fighting can be found on the NIOSH web site under the —spotlights‖ section titled —Fighting Wildfires‖ (http://www.cdc.gov/niosh/topics/firefighting/).

General Considerations

Before cleanup operations are initiated, local and State government emergency policies and guidelines should be checked to determine if any restrictions exist (e.g., water use, discharge of waste water, disposal of debris).

POTENTIAL DANGERS INVOLVED IN CLEANUP OPERATIONS

Fire

Heat sources may remain as a result of smoldering wood or other debris that could reignite if contact is made with a combustible material or if oxygen becomes available. Workers and employers must therefore take extra precautions. At least two fire extinguishers, each with a UL rating of at least 10A, should be provided at every cleanup activity.

Electrical Hazards

NIOSH has investigated several work-related electrocution deaths following natural disasters. To prevent future electrocutions, NIOSH urges those involved in cleanup activities to take the following steps:

- If water has been present anywhere near electrical circuits and electrical equipment, turn off the power at the main breaker or fuse on the service panel. Do not turn the power back on until electrical equipment has been inspected by a qualified electrician. Never enter flooded areas or touch electrical equipment if the ground is wet, unless you are certain that the power is off. **NEVER** handle a downed power line. No not use electrical equipment that has been exposed to heat from the fire until checked by an electrician.
- When using gasoline and diesel generators to supply power to a building, switch the main breaker or fuse on the building service panel to the "off" position prior to starting the generator. This will prevent inadvertent energization of power lines from back feed electrical energy from the generators, and help to protect utility line workers from possible electrocution.
- If clearing or other work must be performed near a downed power line, contact the utility company to discuss de-energizing and grounding or shielding of power lines; maintain a safe distance from the power lines until they have been de-energized. Extreme caution is necessary when moving ladders and other equipment near overhead power lines to avoid inadvertent contact. If you are working on or near power lines, refer to the additional recommendations provided in that section below. Be aware of possible fire damage to poles and other structures carrying overhead power lines.

Unstable Work Surfaces

Cleanup activities may involve walking on unstable surfaces such as construction debris, trees and other vegetation. Piles of debris and other unstable work surfaces create a risk for traumatic injury from slips, falls, puncture wounds from nails and sharp objects, and collapsing materials. Extreme caution is necessary when working on these

surfaces. Protective equipment, such as hard hats, safety glasses, leather gloves, and steel toe boots should be considered to minimize the risk of injury.

Carbon Monoxide

Cleanup activities may involve the use of gasoline- or diesel-powered pumps, generators, and pressure washers. Because these devices release carbon monoxide, a deadly, colorless, odorless gas, operate all gasoline-powered devices outdoors and **never** bring them indoors. It is virtually impossible to assess adequate ventilation. NIOSH has investigated several carbon monoxide poisoning deaths in the past caused by the use of gasoline-powered engines indoors or in confined spaces. Be aware that high levels of carbon monoxide may occur in confined spaces from the fires.

Musculoskeletal Hazards

Cleanup workers are at risk for developing serious musculoskeletal injuries to the hands, back, knees, and shoulders. Special attention is needed to avoid back injuries associated with manual lifting and handling of debris and building materials. To help prevent injury, use teams of two or more to move bulky objects, avoid lifting any material that weighs more than 50 pounds (per person), and use proper automated-assist lifting devices.

Thermal Stresses

Heat: Cleanup workers are at serious risk for developing heat stress. Excessive exposure to hot environments can cause a variety of heat-related problems, including heat stroke, heat exhaustion, heat cramps, and fainting. To reduce the potential for heat stress, drink a glass of fluid every 15 to 20 minutes and wear light-colored, loose- fitting clothing. Additionally, incorporate work-rest cycles into work routines, work during the cooler hours of the day, when possible, or distribute the workload evenly throughout the day. When air conditioning is unavailable, open windows and use fans.

Cold: If standing water is present from fire fighting be aware that working in water which is cooler than 75 degrees F (24 degrees C) will remove body heat more rapidly than it can be replaced, resulting in hypothermia. To reduce the risk of hypothermia, wear high rubber boots, ensure that clothing and boots have adequate insulation, avoid working alone, take frequent breaks out of the water, and change into dry clothing when possible.

Heavy Equipment

Only those properly trained should operate heavy equipment such as bulldozers, backhoes, and tractors. If you are operating this type of equipment, make sure you turn

it off and block it against motion when not in use. Operators should be aware of the activities around them to protect other workers on foot from being struck by moving equipment. Heavy equipment operators should not exceed the load capacity of cranes and other lifting equipment and ensure that workers do not walk under areas where cranes and other heavy equipment are being used to lift objects.

Structural Instability

Fires can rearrange and damage natural walkways, as well as sidewalks, parking lots, roads, and buildings. Never assume that fire-damaged structures or ground are stable. Buildings that have been burned may have suffered structural damage and could be dangerous. Don t work in or around any building damaged by fire until it has been examined and certified as safe for work by a registered professional engineer or architect. Assume all stairs, floors, and roofs are unsafe until they are inspected. Leave immediately if you hear shifting or unusual noises as this may signal a possible collapse.

Hazardous Materials

Fires to commercial and residential buildings and water used to fight the fire can dislodge tanks, drums, pipes, and equipment, which may contain hazardous materials such as pesticides or propane. Containers may be damaged by fire and heat. Do not attempt to move unidentified dislodged containers without first contacting the local fire department or hazardous materials team. If working in potentially contaminated areas, avoid skin contact or inhalation of vapors by wearing appropriate protective clothing and respirators. Contact NIOSH for more information on the proper safety equipment. Frequently and thoroughly wash skin areas that may have been exposed to pesticides and other hazardous chemicals.

PREVENTION MEASURES

First Aid

First aid, even for minor cuts and burns, is extremely important. Immediately clean out all open wounds and cuts with soap and clean water. Most cuts, except minor scratches, sustained during cleanup activities will warrant treatment to prevent tetanus. If you are injured, contact a physician to determine the necessary type of treatment.

Protective Equipment

For most clean-up work activities, you will need the following personal protective equipment: hard hats, safety goggles, heavy work gloves, and watertight boots with steel toe and insole (not just steel shank). For information on what equipment you need

for protection, contact your local OSHA office or NIOSH. Excessive noise from equipment such as chain saws, backhoes, tractors, pavement breakers, blowers, and from heavy equipment (e.g., earth moving equipment, helicopters) may cause ringing in the ears and subsequent hearing damage. If working with any noise that you must shout over to be heard, you should wear earplugs or other hearing protection devices.

Working in Confined Spaces

If you are required to work in a boiler, furnace, pipeline, pit, pumping station, septic tank, sewage digester, storage tank, utility vault, well, silo, or similar enclosed structures, you should be aware of the hazards of working in confined spaces. A confined space has one or more of the following characteristics:

- limited openings for entry or exit;
- unfavorable natural ventilation; or
- Is not designed for continuous worker occupancy.

Toxic gases, a lack of oxygen, or explosive conditions may exist in the confined area, resulting in a potentially deadly atmosphere. Because many toxic gases and vapors cannot be seen or smelled, never trust your senses to determine if safe entry is possible. Never enter a confined space unless you have been properly trained, even to rescue a fellow worker! If you need to enter a confined space and do not have the proper training and equipment, contact your local fire department for assistance.

Working On or Near Power Lines [Recommendations for Utility Workers-ONLY]

Several workers have died of electrocution following natural disasters. Workers and employers must take extreme caution while attempting to restore power or clear areas near downed power lines. In one instance, a worker lost his life while removing trees from a de-energized power line that had been knocked down by a storm. While inspecting the completed work, the man stepped on the line and was electrocuted by "feedback" energy from a portable backup generator at a nearby gas station. Feedback energy occurs when a de-energized line becomes energized by a secondary power source.

Another worker died cleaning branches from a power line, following a storm. He was electrocuted after falling from a tree onto a line thought to be de-energized. Although the workers had opened a fused switch on a transformer, the line remained energized through another transformer. If you are working on or near power lines, the following steps may save your life:

- Treat all power lines as energized until you have followed the required procedures for personally de-energizing and testing them with an appropriate

testing device. Do not rely on "fuzzing" to determine if a power line has been de-energized.

- Verifying that a line is not energized may not ensure your safety. You must also ground lines on both the load and supply sides of the work area. Grounding is necessary to protect you from the hazards of feedback electrical energy from a secondary power source, such as a portable generator.
- When restoring power in underground vaults, added precautions are necessary to avoid explosion hazards. As vaults containing electrical connections are drained or pumped out, and energized, potentially explosive gases may form. If you are required to work in a utility vault, refer to the Confined Spaces section of this Fact Sheet.

RESPIRATORY HAZARDS

If you are involved in cleanup efforts you may be exposed to ash, soot and fire decomposition products that may cause irritation and other respiratory effects. Spoiled and/or wet vegetation and other organic/agricultural materials often grow large amounts of bacteria and mold during warm weather. Breathing these organisms and the organic dust produced may cause lung disease. Use proper engineering controls to exhaust and replenish adequate fresh air if working indoors. A high efficiency particulate air (HEPA)-type vacuum is recommended when cleaning surfaces contaminated with dust. The use of a typical household vacuum should be avoided since it will re-suspend the collected dust into the air. When exposure to dusts cannot be controlled or avoided, exposure can be reduced by routine use of a well-fitted NIOSH-certified air-purifying respirator (such as an N-95 or more protective respirator).

STRESS, LONG HOURS, AND FATIGUE MAY INCREASE THE RISKS FOR INJURY AND ILLNESS

Continued long hours of work, combined with emotional and physical exhaustion and losses from damaged homes and temporary job layoffs, can create a highly stressful situation for cleanup workers. Workers exposed to these stressful conditions have an increased risk of injury and emotional crisis, and are more vulnerable to stress-induced illnesses and disease. Emotional support from family members, neighbors, and local mental health professionals can help to prevent more serious stress-related problems in the difficult months ahead. People working in all phases of cleanup work can reduce their risks of injury and illness in several ways:

- Set priorities for cleanup tasks and pace the work over several days (or weeks). Avoid physical exhaustion.
- Resume a normal sleep schedule as quickly as possible. Get plenty of rest and take frequent rest breaks BEFORE exhaustion builds up.

- Take advantage of disaster relief programs and services in your community.
- Be alert to emotional exhaustion or strain. When family members and neighbors are unavailable for emotional support, consult professionals at community health and mental health centers.

For more information about these or other occupational safety and health topics contact NIOSH at: 1-800-35-NIOSH (1-800-356-4674) Fax: 513: 533-8573

E-mail: pubstaft@cdc.gov

www.cdc.gov/niosh

Appendix F – Storm Water Controls, Best Management Practices

At a minimum, all impacted or potentially impacted residential/commercial lots should be protected by a combination of the following BMPs:

1. Fiber rolls

Description - Fiber rolls (also called fiber logs or straw wattles) are tube-shaped erosion-control devices filled with straw, flax, rice, coconut fiber material, or composted material. Each roll is wrapped with UV-degradable polypropylene netting for longevity or with 100 percent biodegradable materials like burlap, jute, or coir. Fiber rolls complement permanent best management practices used for source control and re-vegetation. When installed in combination with straw mulch, erosion control blankets, hydraulic mulches, or bounded fiber matrices for slope stabilization, these devices reduce the effects of long or steep slopes (Earth Saver Erosion Control Products, 2005). Fiber rolls help to slow, filter, and spread overland flows. Fiber rolls also help reduce sediment loads to receiving waters by filtering runoff and capturing sediments.

Application - On slopes, install fiber rolls along the contour with a slight downward angle at the end of each row to prevent ponding at the midsection (California Straw Works, 2005). Turn the ends of each fiber roll upslope to prevent runoff from flowing around the roll. Install fiber rolls in shallow trenches dug 3 to 5 inches deep for soft, loamy soils and 2 to 3 inches deep for hard, rocky soils. Determine the vertical spacing for slope installations on the basis of the slope gradient and soil type. According to California Straw Works (2005), a good rule of thumb is:

1:1 slopes = 10 feet apart

2:1 slopes = 20 feet apart

3:1 slopes = 30 feet apart

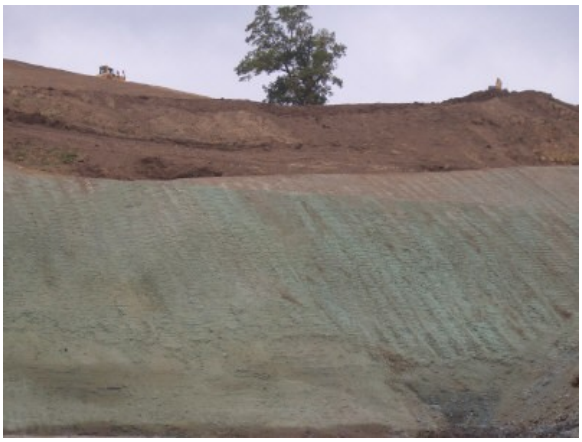
4:1 slopes = 40 feet apart

On projects without slopes, Fiber rolls can also be used at projects with minimal slopes. Typically, the rolls are installed along sidewalks, on the bare lot side, to keep sediment from washing onto sidewalks and streets and into gutters and storm drains. For installations along sidewalks and behind street curbs, it might not be necessary to stake the fiber rolls, but trenches must still be dug. Fiber rolls placed around storm drains and inlets must be staked into the ground. These rolls should direct the flow of runoff toward a designated drainage area. Place them 1 to 1½ feet back from the storm drain or inlet.

Maintenance - The maintenance requirements of fiber rolls are minimal, but short-term inspection is recommended to ensure that the rolls remain firmly anchored in place and are not crushed or damaged by equipment traffic (Murphy and Dreher, 1996). Monitor fiber rolls daily during prolonged rain events. Repair or replace split, torn, unraveled, or slumping fiber rolls. Fiber rolls are typically left in place on slopes. If they are removed, collect and dispose of the accumulated sediment. Fill and compact holes, trenches, depressions, or any other ground disturbance to blend with the surrounding landscape.

2. Hydro-seeding or mulching

Hydroseeding is a popular technique for applying seeds, fertilizer, and chemical stabilizers in a single application (Source: Terra Firma Industries, 2000)



Description - Seeding is used to control runoff and erosion on disturbed areas by establishing perennial vegetative cover from seed. It reduces erosion and sediment loss and provides permanent stabilization. This practice is economical, adaptable to different site conditions, and allows selection of a variety of plant materials.

Application - Seeding is well-suited in areas where permanent, long-lived vegetative cover is the most practical or most effective method of stabilizing the soil. Use seeding on roughly graded areas that will not be re-graded for at least a year. Vegetation controls erosion by protecting bare soil surfaces from displacement by raindrop impacts and by reducing the velocity and quantity of overland flow. Grasses typically emerge within 4-28 days.

Maintenance - Maintenance for seeded areas will vary depending on the level of use expected. Use long-lived grass perennials that form a tight sod and are fine-leaved for areas that receive extensive use, such as homes, industrial parks, schools, churches, and recreational areas. Whenever possible, choose native species that are adapted to local weather and soil conditions to reduce water and fertilizer inputs and lower maintenance overall. In arid areas, consider seeding with non-grass species that are adapted to drought conditions, called xeriscaping, to reduce the need for watering.

Low-maintenance areas are mowed infrequently or not at all and do not receive lime or fertilizer regularly. Plants must be able to persist with minimal maintenance over long periods of time. Use grass and legume mixtures for these sites because legumes fix nitrogen from the atmosphere. Sites suitable for low-maintenance vegetation include steep slopes, stream or channel banks, some commercial properties, and "utility" turf areas such as road banks.

3. Silt Fence

Description - Silt fences are used as temporary perimeter controls around sites where construction activities will disturb the soil. They can also be used around the interior of the site. A silt fence consists of a length of filter fabric stretched between anchoring posts spaced at regular intervals along the site at low/down slope areas. The filter fabric should be entrenched in the ground between the support posts. When installed correctly and inspected frequently, silt fences can be an effective barrier to sediment leaving the site in storm water runoff.

Application - Silt fences apply to construction sites with relatively small drainage areas. They are appropriate in areas where runoff will occur as low-level flow, not exceeding 0.5 cfs. The drainage area for silt fences should not exceed 0.25 acre per 100-foot fence length. The slope length above the fence should not exceed 100 feet (NAHB, 1995). The bottom of the silt fence must be keyed in or water may flow underneath it. A trench should be excavated along the proposed layout line of the fence. After the silt fence stakes have been driven into the trench, backfill over the fence fabric and compact soil.

Maintenance - Inspect silt fences regularly and frequently, as well as after each rainfall event, to make sure that they are intact and that there are no gaps where the fence meets the ground or tears along the length of the fence. If you find gaps or tears, repair or replace the fabric immediately. Remove accumulated sediments from the fence base when the sediment reaches one-third to one-half the fence height. Remove sediment more frequently if accumulated sediment is creating noticeable strain on the fabric and the fence might fail from a sudden storm event. When you remove the silt fence, remove the accumulated sediment as well.

4. Compost Blankets/Mats

Description - A compost blanket is a layer of loosely applied compost or composted material that is placed on the soil in disturbed areas to control erosion and retain sediment resulting from sheet-flow runoff. It can be used in place of traditional sediment and erosion control tools such as mulch, netting, or chemical stabilization. When properly applied, the erosion control compost forms a blanket that completely covers the ground surface. This blanket prevents storm water erosion by (1) presenting a more permeable surface to the oncoming sheet flow, thus facilitating infiltration; (2) filling in small rills and voids to limit channeled flow; and (3) promoting establishment of vegetation on the surface. Composts used in compost blankets are made from a variety of feedstock, including municipal yard trimmings, food residuals, separated municipal solid waste, bio-

solids, and manure. Compost blankets can be placed on any soil surface: rocky, frozen, flat, or steep. The method of application and the depth of the compost applied will vary depending upon slope and site conditions. The compost blanket can be vegetated by incorporating seeds into the compost before it is placed on the disturbed area (recommended method) or the seed can be broadcast onto the surface after installation (Faucette and Risse, 2001).

Application - Compost blankets are most effective when applied on slopes between 4:1 and 1:1, such as stream banks; road embankments; and construction sites, where storm water runoff occurs as sheet flow. Compost blankets are not applicable for locations with concentrated flow. Because the compost is applied to the ground surface and not incorporated into the soil, a compost blanket provides excellent erosion and sediment control on difficult terrain—including steep, rocky slopes.

Maintenance - The compost blanket should be checked periodically and after each major rainfall. If areas of the compost blanket have washed out, another layer of compost should be applied. In some cases, it may be necessary to add another storm water BMP, such as a compost filter sock or silt fence. On slopes greater than 2:1, establishing thick, permanent vegetation as soon as possible is the key to successful erosion and sediment control. Restricting or eliminating pedestrian traffic on such areas is essential (Faucette and Ruhlman, 2004).

5. Soil Binders / Chemical Stabilization

A truck applies chemical stabilizers to reduce soil erosion where vegetation can not be planted (Source: Terra Firma Industries, 1999)

Description - Chemical stabilizers, also known as soil binders or soil palliatives, provide temporary soil stabilization. Vinyl, asphalt, or rubber is sprayed onto the surface of exposed soils to hold the soil in place and minimize erosion from runoff and wind. These materials are easily applied to the surface of the soil, can stabilize areas where vegetation cannot be established, and provide immediate protection.

Application - Use chemical stabilizers alone in areas where other methods of stabilization are not effective because of environmental constraints, or use them in combination with vegetative or perimeter practices to enhance erosion and sediment control. Soil binders require a minimum of curing time before becoming fully effective, therefore binders should not be applied during or immediately before rainfall.

Maintenance – Inspect high traffic areas daily and low traffic areas on a weekly basis during debris removal activities. High traffic areas are those exposed to daily use (vehicle or foot traffic) by contractors or other personnel. Low traffic areas are those available for use but not in a daily manner. If necessary, reapply stabilizer.

Additionally, all storm drain inlets within the vicinity of the burn site need to be should have filter fabric installed underneath the inlet grate in addition to one of the following BMPs:

6. Sandbag Barrier or Fiber Rolls (surrounding inlet entrances)

Application - All temporary inlet protection should have a drainage area no greater than 1 acre per inlet. Temporary controls should be constructed before the surrounding landscape is disturbed. Excavated drop inlet protection and block and gravel inlet protection are applicable to areas of high flow, where drain overflow is expected. Fabric barriers are recommended for smaller, flatter drainage areas (slopes less than 5 percent leading to the drain). Temporary drop inlet control measures are often used in sequence or with other erosion control techniques.

Maintenance - Check all temporary control measures after each storm event. Remove all accumulated sediment from the area around the drop inlet when it reaches 1/3 the barrier height. Repair or replace broken or ripped bags, and reshape as necessary. When no longer needed, remove the barrier and accumulated sediment then clean, re-grade, and stabilize the area.

Given California's unique environment, both built and natural, special circumstances may arise that require additional care and attention to the protection of water quality and the installation of BMPs. For example, sites near natural receiving waters, drainage or irrigation canals, or steep slopes. The lead agency should contact their local Regional Water Quality Control Board office to discuss the most appropriate BMP application in these cases.

Additional photos and installation instructions for the above listed BMPs can be found on CalTrans Division of Construction's webpage at:

http://www.dot.ca.gov/hq/construc/stormwater/manuals.htm

Appendix G – Naturally Occurring Asbestos Fact Sheet

Naturally Occurring Asbestos: Approaches for Reducing Exposure

Purpose and Intended Audience

This fact sheet provides an overview of approaches for reducing exposures to naturally occurring asbestos (NOA). It is intended to make general information about management options available to state and local government officials, project managers, and environmental professionals. The information should serve as a starting point for identifying current NOA management practices. In general, selecting an appropriate approach to reduce NOA exposure should be determined on a location-specific basis.

NOA management approaches can reduce but may not completely eliminate potential exposures to naturally occurring asbestos.

Information contained in this fact sheet was obtained from the currently available literature, including state and local government publications. To obtain more information on NOA management approaches, including their performance and frequency of use, refer to the resources provided at the end of this fact sheet.

Naturally Occurring Asbestos

NOA occurs in rocks and soil as a result of natural geological processes. Natural weathering or human activities may disturb NOA-bearing rock or soil and release mineral fibers into the air, which pose a greater potential for human exposure by inhalation.

The U.S. Geological Survey (USGS) has an ongoing project to map the locations of historical asbestos mines, former asbestos exploration prospects, and natural asbestos occurrences. At least 35 states have reported NOA locations. To locate NOA areas in a specific part of the country, begin by consulting the USGS reports (see below) and contact a state geologist.

U.S. Geological Survey	• Eastern United States http://pubs.usgs.gov/of/2005/1189/ • Central United States http://pubs.usgs.gov/of/2006/1211/ • Rocky Mountain States http://pubs.usgs.gov/of/2007/1182/ • Southwestern United States http://pubs.usgs.gov/of/2008/1095/
California Geological Survey	Asbestos Reports, Maps and Guidelines for Geologic Investigations • http://www.conservation.ca.gov/cgs/minerals/hazardous_minerals/asbestos/Pages/Index.aspx

This fact sheet is intended solely to provide general information on approaches that may be useful when addressing naturally occurring asbestos (NOA). It is not intended, nor can it be relied upon, to create any rights enforceable by any party, including any party in litigation with the United States. EPA considers NOA to be in an altered form if it has been disturbed by human activity; NOA is not considered to be altered if modified solely through naturally occurring processes or phenomena, from a location were it is naturally found. This fact sheet may be revised periodically without public notice. Use or mention of trade names does not constitute endorsement or recommendation for use.

In this fact sheet, NOA does not refer to commercially processed, asbestos-containing material, such as insulation and fire protection in buildings or automobile brake linings. Information about commercial asbestos-containing products is available in other publications, including the resources mentioned on EPA's asbestos Web page http://www.epa.gov/asbestos.

Approaches for Mitigating Exposures to NOA

The following general approaches to mitigate inhalation exposures to NOA are aimed at reducing NOA releases from rock or soil into the air:

- Leave NOA material in place and undisturbed
- Cover or cap NOA material
- Limit dust generating activities
- Excavate and dispose of NOA material

Approaches for reducing NOA exposure are similar to practices used for asbestos-containing materials in commercial applications.

Depending on the situation, a combination of engineering controls, work practices, and institutional (administrative) controls may be needed to implement an approach and reduce potential exposures to NOA. Selecting an approach depends on factors including:

- Accessibility of NOA (ground surface vs. below ground surface)
- Types of activities that disturb NOA (construction project vs. gardening)
- Climate and weather conditions
- Current and future land uses
- Technical and administrative feasibility of the approach

Typical engineering controls involve the use of covers and caps, vegetation, fencing, landscaping, and in some conditions, the application of water to suppress dust. Local factors, such as climate, influence the extent to which these approaches are implemented. For example, areas with dry or windy conditions may need more dust control than those with humid or less windy conditions.

Common work practices include limiting activities on NOA-containing areas, reducing driving speed on unpaved roads that may contain NOA, and cleaning vehicles driven over NOA. For example, during road construction or maintenance activities on unpaved areas where NOA is present, the Asbestos Airborne Toxics Control Measure (ATCM) for Construction, Grading, Quarrying, and Surface Mining Operations of the California Air Resources Board (ARB) requires that vehicle speeds not exceed 15 miles per hour.[1] Worker health and safety measures that include respiratory protection may be warranted. For information, consult with Occupational Safety and Health Administration Asbestos Standards for the General Industry and Asbestos Standards for the Construction Industry (http://www.osha.gov/SLTC/asbestos/hazards.html).

Examples of Engineering and Work Practices that Reduce Exposure to NOA

Excavation, Grading, or Utility Work at Construction Projects	• Wet road surfaces with water using trucks, hoses, or sprinklers[1] • Wet piles of excavated material and cover them with tarps, plastic sheeting, or other items[1] • Continuously mist the work area[1] • Install wind barriers around the work area[1] • Clean or decontaminate equipment and vehicles to ensure that no equipment or workers track soil out of the work area (a gravel pad, tire shaker, or wheel wash system may be used to clear soil from vehicles)[1] • Wet the work area using a spray system attached directly to rock cutting or drilling equipment, such as a fine-mist sprayer or a variable-rate fogger nozzle (similar to those used in fire fighting)[2] • Excavate utility trenches to an adequate depth and backfill them with clean soil so that future repair work will not need excavation into potential NOA-containing materials[3] • When transporting NOA-containing materials, avoid overloading trucks; keep the material below the top of each truck compartment and cover material with a tarp[4] • Limit personnel and vehicle access to the work area[5] • Identify NOA-containing areas with signs[2] • Reduce driving speed[1] • Reduce drilling or excavating speeds[6] • Excavate during periods of calm or low winds[1]
Roads and Parking Areas (unpaved and gravel roads)	• Cover roads with non-NOA-containing rock, chemical sealants or dust suppressants, chip seals, limestone aggregate, petroleum sealants, or asphalt cement paving[1, 7, 8] • Wet road surfaces with water[1] • Install windbreaks or berms[1] • Reduce driving speed[1] • Avoid dusty areas, especially in windy conditions[1]

3

Around Communities (playgrounds, ball fields, pathways, and gardens)	• Cover areas of rock and soil with clean soil, rock, vegetation, or other material (see next section, General Considerations for Using Covers or Caps)[3, 9] • Pave over unpaved walkways, driveways, or roadways containing NOA[1, 10] • Landscape areas with vegetation, such as NOA-tolerant plants, and add a layer of organic mulch or NOA-free soil. Water plants often until they are established to minimize erosion[9] • Water garden areas before digging[9] • Keep windows and doors closed on windy days and during periods when nearby rock or soil may be disturbed, such as during construction[9] • Limit track-in by using entryway (door) mats, and wipe down pets before they enter buildings to reduce the amount of soil tracked indoors[4, 9] • Allow children to play in outdoor areas only if the area has a ground covering, such as wood chips, mulch, sand, pea gravel, grass, asphalt, shredded rubber, or rubber mats[4] • Relocate outdoor activities to areas that do not contain NOA (walk, run, hike, and bike only on paved trails)[4] • Avoid dusty areas, especially in windy conditions[11]

General Considerations for Using Covers or Caps

One of the most common engineering controls is to place a cover system over the NOA. Cover materials may include clean soil or rock, concrete, chemical sealants or dust suppressants, chip seals, limestone aggregate, petroleum sealants, asphalt paving, geotextiles, wood chips, mulch, sand, pea gravel, shredded rubber, rubber mats, and vegetation.

The complexity of cover systems can vary from simple (e.g., a single soil layer) to complex (e.g., multiple layers of varying materials). Several factors, including cover material properties and site characteristics, affect the type of cover system appropriate for a particular area.

The availability of materials may influence the type of cover used. Materials that are readily available and close to the NOA area may be more desirable and cost effective than materials found farther away. For example, artificial turf and other imported materials may be more expensive than locally available soils. The cover material will likely need to be assessed for NOA or other undesirable constituents. Expected lifetime, maintenance, and monitoring requirements also affect the cost of covers.

The slope of the NOA area may influence the type and thickness of the cover material used. For example, steep slopes may need vegetation or shotcrete (concrete or mortar sprayed onto a surface with a pressurized hose) to promote slope stabilization. Steep slopes typically have a higher potential for erosion and therefore may demand thicker cover material.

The thickness of the cover material should provide a safety factor sufficient to ensure that airborne releases will not occur. Thicker covers may be needed in areas where there is a significant potential for erosion. The surface of a cover should protect against erosion by wind and rain. Materials used for erosion control typically include a layer of topsoil and vegetation. In areas where adequate vegetation is not possible, gravel, admixtures, or riprap may be used for the surface layer. The thickness of the cover may also depend on the presence of other cover components, such as irrigation lines.

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A geotextile, which is a geosynthetic material made of polymer fabric, may be placed below the cover material to mark the presence of NOA and serve as an erosional indicator. Geotextiles also can provide protection, reinforcement, drainage, and separation when applied to the soil surface or between layers of materials. The California Department of Toxic Substances Control (DTSC) recommends that landscaped areas and play fields at schools include a geotextile marker covered by sufficient cover material to provide an effective barrier to reduce NOA exposures.[3] Placement of geotextile markers will demand additional time and expertise.

Long-Term Management Approaches

For long-term management of areas with NOA, institutional controls (ICs) and a maintenance plan may be desirable. In areas where NOA poses potential health concerns, local and state government officials should consider providing educational material to supplement engineering approaches for reducing exposures to NOA. The Agency for Toxic Substances and Disease Registry has developed a fact sheet about asbestos and NOA for the general public entitled "Asbestos and Health: Frequently Asked Questions."[4]

Institutional Controls

For additional information about ICs, refer to the Land Use Controls Web site at http://www.lucs.org

Generally, ICs are administrative or legal mechanisms that are designed to help minimize the potential for human exposure to contamination They also protect the integrity of the engineering measures. ICs are generally divided into four categories:

- *Government controls* include laws and permits (such as local zoning laws and permits required for excavating or digging). Work that may disturb NOA-containing soil may require government approval and may be subject to local or state construction guidelines. In California, the ATCM of the California ARB requires owners and operators to notify the local air quality management district within one business day of discovering NOA, serpentine mineral, or ultramafic rock in an area to be disturbed by construction, grading, quarrying, or surface mining operations.[1] In Virginia, the Fairfax County Health Department requires a compliance plan that includes air monitoring to ensure effective dust control during construction in areas containing NOA.[2]
- *Proprietary controls* include property use restrictions based on private property laws, such as land use easements or covenants.
- *Enforcement tools* include legally binding documents that require individuals or companies to conduct or prohibit specific actions.
- *Informational devices* include deed notices, public advisories, and other measures (such as warning signs and worker health and safety awareness training) that alert and educate people about an area.

Maintenance Plan

A maintenance plan can help ensure that engineering controls and work practices remain effective. In California, for example, DTSC and school districts enter into an agreement to develop and implement an approved long-term operation and maintenance plan under DTSC oversight. These plans generally contain information about the following topics:[3]

- Building locations, utility line locations, and the thickness of cover material across the area
- Routine inspections

- Maintenance work, including erosion and storm water control
- Procedures for repairing cover damage
- Monitoring activities, such as perimeter or personal air monitoring
- Reporting format and frequency
- Restrictions on future activities that may expose NOA
- Management of imported soil and future excavation or trenching activities

Additional Information

- Agency for Toxic Substances and Disease Registry - http://www.atsdr.cdc.gov/NOA
- California Air Resources Board - http://www.arb.ca.gov/toxics/asbestos/asbestos.htm
- El Dorado County, California - http://www.co.el-dorado.ca.us/emd/apcd/asbestos.html
- Fairfax County, Virginia - http://www.fairfaxcounty.gov/hd/asb
- Sacramento County, California - http://www.airquality.org/compliance/asbestosNaturallyOccurring.shtml
- U.S. Environmental Protection Agency - http://www.epa.gov/asbestos/pubs/clean.html

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List of Acronyms

ARB	Air Resources Board
ATCM	Airborne Toxic Control Measure
DTSC	Department of Toxic Substance Control
ICs	institutional controls
NOA	naturally occurring asbestos
USGS	U.S. Geological Survey

Appendix H – Post Removal Site Control

POST REMOVAL SITE CONTROL

EMERGENCY REMOVAL ACTION

ASBESTOS/HAZARDOUS WASTE ASSESSMENT AND REMOVAL CHECKLIST

ADDRESS		
APN		
DATE		
TIME INITIATED		
PERSONNEL (ERRS/START)		

Please mark the box as appropriate:

		YES	NO
ASBESTOS:	Is there potentially ASBESTOS containing materials.		
PUBLIC CONTACT:	Was there any with the PUBLIC at this address?		
	If yes, describe below.		
EMPTY CONTAINERS:	Were EMPTY CONTAINERS identified and marked with GREEN FLUORESCENT PAINT (green dot or MT)?		
FUEL TANKS?			
HHW REMOVED?		**# CONTRS**	**SIZE (GAL/LB)**
Used Oil			
Anifreeze/Batteries			
Paint			
Propane cylinders			

Pesticides/Fertilizers			
Pool or Cleaning Chemicals			
Gasoline			
TYPES OF ASBESTOS			
(i.e. transite piping and/or panels, chimney flue)			
PHOTOS TAKEN:		**YES**	**NO**
Minimum one photo taken of each lot when completed sticker is applied to stake			
		INITIALS	**DATE**
FINAL – HHW REMOVAL COMPLETE:			
ASBESTOS REMOVAL COMPLETE:			
OTHER NOTES:			

Gamma Rad				

Appendix I – U.S. EPA NESHAP Memorandum

Appendix J – Example of a Debris Management Plan

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California Environmental Protection Agency

FINAL OPERATIONAL DEBRIS MANAGEMENT PLAN WITH PROJECT SPECIFICATIONS

for the

GLENVIEW INCIDENT SAN BRUNO, CALIFORNIA

December 10, 2010

Prepared By:

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CalRecycle, Solid Waste Cleanup Program

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For:

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SUMMARY

Per the Executive Order S-14-10, Office of the Governor of the State of California, CalRecycle staff has prepared this structural debris removal report for the County of San Mateo, Environmental Management and the City of San Bruno, and CalRecycle's removal contractor(s). This document is the first of two documents that will treat the removal of the structural debris as a single organized project. A separate but similar document will be prepared for home owners who decide to opt out of the state sponsored cleanup process and perform the structure debris removal on their own. Additionally this document will be considered an interim report until all the supporting documents, which include, but are not limited to, the site specific health and safety plan, community safety plan, confirmation sampling plan are prepared by CalRecycle consultants. A final report for each home site will also be prepared.

The following document was compiled after a field assessment of the destroyed structures at the Glenview Incident, personal experience and knowledge of previous coordinated debris removal projects, environmental removal projects, structure fires, and waste management practices in the United States and abroad. Prior fire experience for Mr. Todd Thalhamer includes daily observations and inspections, direct management of emergency resources and personnel, evaluation of suppression tactics, assessment of environmental impacts, design of environmental remediation, and evaluation of potential impacts from waste fires.

The findings, information, and professional opinions are presented in accordance with generally accepted professional engineering methods and waste management strategies and are limited to the Glenview Incident Area. Any questions or comments concerning this report should be referred to Mr. Todd Thalhamer at 916.798.5464 (cell) or by e-mail at Todd.Thalhamer@CalRecycle.ca.gov. Mr. Thalhamer is a registered Professional Engineer in the State of California and his license number is C055197.

Mr. Thalhamer has prepared this report and his seal as a Registered Civil Engineer in the State of California is affixed below.

Note: This incident is dynamic and the plan will be updated as comments are received and consultants are performed with federal, state, county, and city agencies. No operational plan can be implemented within days of an incident and be considered final without local knowledge, permits and input.

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1 Introduction

On September 10, 2010, the Governor of the State of California, Arnold Schwarzenegger, issued executive order S-14-10, which declared a state of emergency in San Mateo County as a result of an explosion and/or fire (See Attachment A). This order stated that all State agencies with responsibility, regulatory authority or expertise related to recovery efforts in connection with the Glenview Incident shall cooperate fully and act expeditiously in coordination with the California Resources and Environmental Protection Agencies (CalEPA), to facilitate the mitigation of the effects of the fire and the environmental restoration of the City of San Bruno.

The order also states the following:

> The California Emergency Management Agency (Cal EMA) shall coordinate assistance programs offered by all relevant federal, state and local agencies and departments, including, but not limited to, the California Conservation Corps, the Department of Public Health, the Department of Health Care Services, the Department of Mental Health, the Department of Social Services, the Department of Consumer Affairs, the Department of the Highway Patrol, the Department of Forestry and Fire Protection, the Department of Veterans Affairs, the Department of Aging, the Department of Transportation, the Department of Insurance, the Department of Housing and Community Development, the Employment Development Department and California Volunteers. All State agencies with responsibility, regulatory authority, or expertise related to recovery efforts in connection with this explosion and fire shall cooperate fully and act expeditiously in coordination with the California Resources Agency and the California Environmental Protection Agency, to facilitate the mitigation of the effects of the explosion and fire and the environmental restoration of the affected areas. State agencies shall, as necessary for the protection of public health and the environment, assist local governments to enter into contracts and arrange for the procurement of materials, goods, and services necessary to quickly remove dangerous debris, repair damaged resources, and restore and protect the impacted watershed. Because strict compliance with the provisions of the Government Code and the Public Contract Code applicable to state contracts would prevent, hinder, or delay these efforts, applicable provisions of those statutes, including, but not limited to, advertising and competitive bidding requirements, are suspended to the extent necessary to address the effects of the explosion and fire. The Department of Forestry and Fire Protection, the California Department of Corrections and Rehabilitation, and the California Conservation Corps, shall use employees, corps members, inmate and ward labor, where appropriate, to protect public health, safety, and water quality on public lands or where otherwise requested by private property owners.

Additionally the order stated that State agencies shall work with local officials to design and implement a comprehensive structural debris removal plan that will treat the removal of structural debris as a single organized project.

The objective of this document is to meet the above requirements and design a comprehensive structural debris removal plan. This document will be for the state sponsored debris removal and, if requested, a second document will be prepared for a private land owner who elects not to participate in the state sponsored debris removal. Both documents will require removal contractors to follow a set of specifications to mitigate known hazards and conditions to limit the impacts to the surrounding public, environment, and the City of San Bruno.

As part of the executive order, the Resources Agency assigned a number of tasks to agencies and boards under the Resources Agency umbrella. The Department of Resources Recycling and Recovery (CalRecycle) was tasked to design and implement a structural debris removal plan for the Glenview Incident in San Bruno, California. CalRecycle will use the Solid Waste Cleanup Program to implement and oversee the structural debris removal. CalRecycle has mobilized its environmental contractor and consultant to begin the removal process from homes sites once the Right-of-Entry Permits for debris removal on private property are signed by the individual property owners.

CalRecycle has compiled this Debris Plan for the Glenview Incident in the City of San Bruno. Information related to this project was obtained from the Office of the Governor, Glenview Fire Incident, County of San Mateo, Environmental Management, a review of the 2003 San Diego fires, 2007 San Diego and San Bernardino, and past CalRecycle debris removals.

CalRecycle has authorized its remediation contractor Pacific States Environmental Contractor, Inc (CONTRACTOR) to perform the structural debris removal for the County of San Mateo. Pacific States Environmental, Inc is a licensed general California Contractor (License # 723241) with the following classifications, A-General Engineering, C21-Building Moving, Demolition, HAZ-Hazardous Substances Removal, ASB-Asbestos (bid only). This debris management plan will be provided to CONTRACTOR, the County of San Mateo, City of San Bruno and other agencies for comment and review. Once comments are provided the CONTRACTOR will use this debris management plan for the project. This document is dynamic and will be updated as comments are received and consultations are conducted with federal, state, county, and city agencies. No

operational plan can be implemented within days of an incident and be considered final without local knowledge, permits and input.

The debris management plan presents the overall removal plan for the state sponsored cleanup. Table 1 outlines agencies and project participants and their responsibilities relative to the debris plan.

Table 1. Debris Management Plan Project Responsibility [Pending]

Agency/Company	Contact	Responsibility/Assistance
San Mateo County Environmental Health	Dean D. Peterson PE, REHS Director Environmental Health Incident Commander	Overall Incident Management, On-site compliance, identifying household hazardous waste, community relationships, review of confirmation sampling, and county approval and oversight
Resources Agency - CalRecycle, Solid Waste Cleanup Program	Todd Thalhamer On-site Project Engineer Operations Section Chief	Responsible for the management of the operations. Oversight of project, cost control, waste removal, identifying hazards, structural hazards, and project mgmt.
Resources Agency- CalRecycle, Solid Waste Cleanup Program	Wes Mindermann SWCP Supervisor	Implementation of CalRecycle SWCP requirements authorizing the debris removal, work orders for removal contractors, and invoicing.
CalEPA - Department of Toxic and Substances Control	Adam Palmer Nancy McGee	On-site review and support of issues related to hazardous substances
CalEPA Office of the Secretary	Pete Guria	Agency Representative
California Emergency Management Agency	Melinda Stehr Deputy Operations Section Chief	Technical support for debris removal. Also acts as the operation chief.

Recology San Bruno Refuse	Kirsten Pinochi General Manager	Local Waste Hauler and Disposal
Pacific States Environmental Contractor Primary Contractor	Pete Timmerman Project Manager	Prime contractor responsible for removing structural debris and waste.
ARCADIS	James Eisert, P.G. Project Manager	Environmental consultant responsible for field documentation, foundation verification, ash footprint, confirmation sampling, final reports
Network Environmental Systems, Inc.	David Durst Industrial Hygienist	Development of the Site Specific Safety Plan
Smith Crane and Rigging	Chad Smith Project Manager	Tree removal
North Valley Resource Management	Danielle Banchio Registered Forester	State Forester identification of hazard trees

1.1 Site Description

Approximately 34 to 36 homes and other structures were destroyed during the Glenview Incident. One playground and approximately 3 acres of forested area in the adjacent Crestmoor Canyon Open Space Area were also destroyed. A potential of 12,000 tons of waste and debris have been identified for removal. The sites vary in composition: some contain just foundations, ash and metal debris, while others are partially burned. This debris removal plan will cover all structural debris and trees from the Glenview Incident. The CalRecycle operations section chief will make the final decision on what structures and material will be removed.

1.1.1 Site Ownership

The ownership of each structural debris site varies. Legal authority to enter each site will be handled by the County of San Mateo. No work by the CONTRACTOR will begin

on private property unless the property owner signs the Right-of-Entry Permit (See Appendix B). Once the forms are signed debris removal may begin. The CONTRACTOR will also note all issues and concerns by the residents on the form.

1.2 Vicinity and Site Maps

The Glenview Incident is located in the City of San Bruno next to Crestmoor Canyon Open Space. The impacted homes for this debris removal are located on Glenview Drive, Earl Avenue, Claremont Drive, Fairmont Drive, and Concord Way. The work zones have been divided into 3 divisions. Figures 1 through Figure 4 provide project details.

Figure 1. General Location Map (Source Google Earth, September 2010)

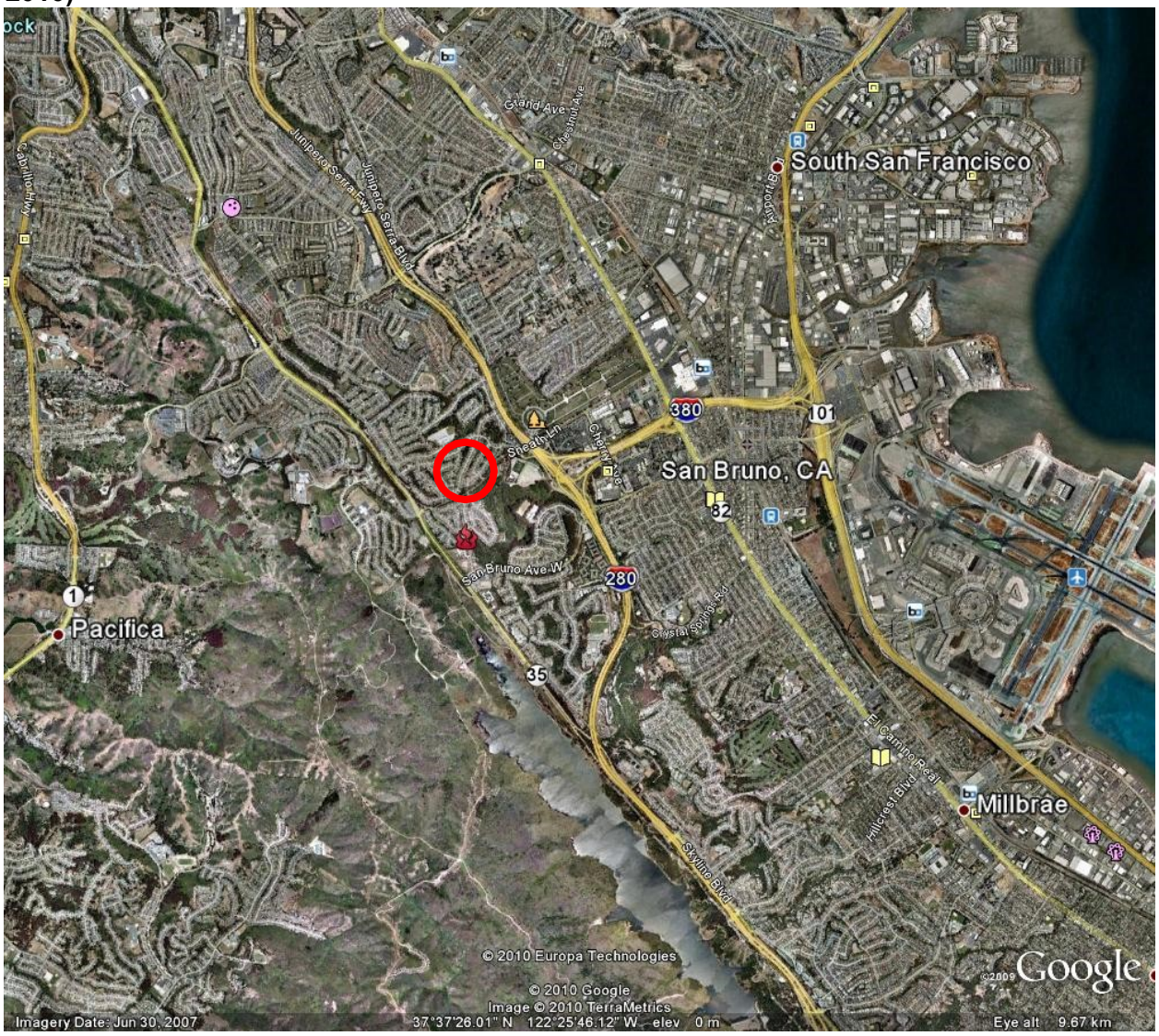


Figure 2. Pre-Incident Condition (Source LA Times and Google September 2010)

Figure 3. Impacted Homes from the Glenview Incident. (Source : City of San Bruno, 2010)

Figure 4. Work Zones by Division Glenview Incident Debris Removal

1.3 Site Characterization

Ash and debris from residential structures that are consumed by fires contain concentrated amounts of heavy metals, such as arsenic, barium, beryllium, copper, chromium, cadmium, lead and zinc. This concentration of metals has been demonstrated in the **Assessment of Burn Debris - 2007 Wildfires San Bernardino and San Diego Counties, California (http://www.calepa.ca.gov/Disaster/Fire/)**.

Hazardous asbestos in stucco, roofing, tile, surfacing materials was commonly used in pre-1984 homes. The Bay Area Air Quality Management District (BAAQMD) and United States Environmental Protection Agency (USEPA), Region 9, has determined that all ash and commingled debris from the Glenview Incident should be managed as hazardous asbestos containing waste in accordance with federal asbestos National Emissions Standards for Hazardous Air Pollutants (NESHAP) and Bay Area Air Quality Management District Regulation 11, Rule 2. Although site-specific surveys and testing under these requirements could be performed to differentiate ash and commingled debris not regulated as hazardous asbestos containing waste, United States Environmental Protection Agency (USEPA) Region 9 has concluded that in this Incident the surveys would probably not be cost effective and could delay response time. This requirement will be implemented for this Plan and is substantially more stringent than prior residential ash debris removal projects. All hazardous asbestos containing waste will be transported for disposal at the Hay Road Landfill, Solano County. The Hay Road Landfill is authorized to accept such material.

Impacted soil and debris outside the ash footprint will be managed as a non-hazardous solid waste for disposal at the Hay Road Landfill. Metal debris, wood and concrete will be recycled to the extent feasible. Tree debris will be taken to Hay Road landfill for use as biofuel. Table 2 provides an estimated range of possible tonnage by material per structure.

Table 2. Estimated Debris[1] per Home Site to be Transported to an Appropriate Facility

MATERIAL	Average Tonnage
Soil and Debris	150 to 200
Ash and Debris	20 to 60
Concrete Debris (Recycle)	20 to 30
Brick	0 to 5
Metal Debris (Recycle)	5 to 10
Other (Trees, drainage, etc.)	0 to 50

[1] Estimated based on tonnages removed from Tahoe 2007

Based on a count of 34 to 36 structures destroyed and/or damaged, the tonnage of debris from structures may reach as high as 12,000 tons.

1.4 Removal Costs

Based in general on prior similar debris removal projects, an initial cost estimate of $36,000 per home will be used for removal, and $3,000 for environmental sampling and reports. Overall the project costs are estimated to range from $1.5 million to $2.0 million dollars for debris removal on private lots, with an additional estimated cost of up to $200,000 for debris and tree removal from public areas (park and playground). Actual costs may vary based on site-specific conditions in the field. Removal costs may range from $25,000 for the smaller homes to as much as $65,000 for large homes with substantial concrete features, retaining walls, and foundations. Daily project costs will be tracked per home site. Other removal costs associated with privately owned site structural debris removal that are not based on direct charge, such as daily watering, street sweeper, project management, industrial sampling, etc., will be shared by each home site. The cost per home will be based on the square footage of the foundation and associated structures and the ash footprint. Any costs and activities associated with removal of structures, trees, debris or other features on public property will be estimated and approved by the Incident Commander and Operations Section Chief and will not be borne by private homeowners.

1.5 Known Hazards

Depending on how much of the structure is present, the known hazards will vary. If just ash and debris is present, the removal site may contain elevated levels of heavy metals and/or asbestos. All home sites located where there are burned trees will pose a fall hazard. There are a number of partly burned homes that will pose a fall hazard and all chimneys will also be considered a fall hazard. There are physical hazards (i.e., slips, trips, and falls) from exposed glass, metals and debris. Additionally, the weather will pose potential hazards from fog, rain and high winds. Other hazardous material or medical wastes may be discovered during the removal. Utilities, such as electrical, gas, cable, telephone, and sewer, are present and need to be accounted for while removing the debris.

2 Proposed Cleanup

2.1 Incident Command System (ICS)

This debris removal will use the ICS. ICS is the model management tool for command, control and coordination of all agencies and/or private companies as they work toward the common goal of removing the debris and protecting the environment. The incident will be managed by County of San Mateo Office of Emergency Service, County of San Mateo Environmental Health Department, and CalRecycle.

CalRecycle will act as operations and provide the necessary contractors, resources and management to operate the Debris Removal Operations Center (DROC). CalRecycle will provide an operation section chief responsible for CalRecycle's contractor and implementation of the plan. The operations section chief will have a phone/radio available at all times while on-site. If the operations chief leaves DROC for a significant amount of time, a designated person will be placed in charge. The operations section chief's responsibilities will include, but not be limited to:

- Establish debris removal protocols;
- Overall management of operational issues and concerns;
- Overall management of removal contractor resources;
- Overall management of environmental consultant and health and safety consultant;
- Review and approve debris removal sites;
- Review and approve of disposal locations
- Review and approve of all expenditures;
- Review and approve of all sampling and assessment protocols;
- Review of all safety requirements on-site ;
- Acts as a liaison with the public, media, and public officials;
- Field monitor the project

- Oversee the decontamination of all equipment, personal protective equipment, and samples from contaminated areas, when appropriate;
- Review and approve all purchases and ensures that all assigned equipment described in the safety plan is available and used as appropriate;
- Provide emergency response treatment procedures [i.e., CPR and First Aid];
- Monitor and document on-site health hazards;
- Is aware of and uses, if necessary, emergency procedures, evacuation routes, and the telephone numbers of the local hospital and police departments;
- Conduct inspections to determine if the safety plan is being implemented satisfactorily;
- Document final site conditions and note exceptions to the protocols

2.2 Scope of Work

Major items of work anticipated in this project may include, but are not limited to:

- Establishing a Debris Removal Operation Center (DROC) and providing site sanitation;
- Coordinating contractor resources;
- Installing of project signs indicating removal progress;
- Removing and disposal of disaster debris, solid waste, and demolition debris, including waste tires;
- Segregating and sorting of recyclable metal debris and delivery to recycling facilities;
- Hauling of ash debris to an appropriate facility;
- Recycling concrete debris;
- Providing traffic control signs;
- Site contouring, posting of signs, and erosion protection;
- Cost tracking;
- Installing erosion control devices; and
- Removing trees that pose a safety hazard.

Additionally the CONTRACTOR will employ independent third party consultants to provide the following services, but not limited to:

- Prepare a site specific health and safety plan;
- Prepare a community safety plan;
- Prepare a native soils and asbestos background report;
- Perform field documentation for each home site;
- Perform an asbestos survey of each home site;
- Perform site specific air monitoring;
- Perform an assessment of hazardous trees;
- Perform confirmation sampling for each home site; and

- Prepare final report for the project and for each home site.

2.3 Work Plan

The following summarizes the tasks the CONTRACTOR, or an approved subcontractor, will undertake during structural debris removal:

1. CalRecycle's CONTRACTOR, or an approved subcontractor, will first inspect all structures at each site and evaluate hazards. Next CONTRACTOR will coordinate with local agencies and resources to determine what materials and tasks are required. (**Note: No work by CalRecycle's Contractor or its subcontractor(s), including inspection of structures and/or evaluation of hazards, will occur on private property until the property owner signs the Right-of Entry, no exceptions**).

2. The CONTRACTOR, or an approved subcontractor, shall provide the posts and address signs to the county to install. The CONTRACTOR will install site project signs and potentially address signs if required. The CONTRACTOR will prepare for emergency erosion control to prevent the issues with runoff associated with significant rain events.

3. The CONTRACTOR, or an approved subcontractor, will perform the necessary site documentation and an asbestos survey.

4. The CONTRACTOR, or an approved subcontractor, will then remove the ash and debris from the site. This material will be treated as a hazardous asbestos containing waste. Dust emissions during all phases of the removal will be controlled via a water spray from a fire fighting grade nozzle.

5. The CONTRACTOR, or an approved subcontractor, will separate and haul all recyclable metal to acceptable facilities for recycling. Dust emissions during all phases of the demolition will be controlled via a water spray from a fire fighting grade nozzle.

6. The CONTRACTOR, or an approved subcontractor, will be responsible for removing any other hazardous wastes except for household hazardous wastes discovered during the removal. Household hazardous waste will be segregated and stored on-site by CalRecycle for pickup by the County of San Mateo.

7. The CONTRACTOR, or an approved subcontractor, will remove all chimneys and foundations. CalRecycle's engineer has determined that all chimneys pose a health and safety risk to the removal team. All chimneys will be taken down with proper dust control. If feasible, the chimney and concrete foundation or slab will be recycled. The slab or foundation may have to be washed down to ensure the concrete is not contaminated. Additional excavation may be necessary around the area of the foundation/slab to remove ash and debris.

8. After all the appropriate debris is removed from the site, the CONTRACTOR, or an approved subcontractor, will remove 3 to 6 inches of soil from the impacted area.

9. Once debris, ash and soil removal is completed, the area will be tested by the CONTRACTOR, or an approved subcontractor, to ensure residual contamination is removed.

10. The CONTRACTOR, or an approved subcontractor, will assess trees in the projects area, and identify and remove all trees that require removal for the protection of public health and safety and the environment. All wastes generated from the removal of trees will be hauled to an appropriate waste or recycling facility.

11. After all debris is removed the CONTRACTOR, or an approved subcontractor, will complete the erosion control measures. The erosion control devices shall be installed using the erosion control guidelines established by the County of San Mateo, Building Department, or other appropriate agency. These specifications will be one of three levels of erosion control as determined by the operations section chief. Hydroseeding of lots will be completed as determined by the Operations Chief.

Table 3 provides disposal information to assist the CONTRACTOR in the removal of the debris from the Glenview Incident. CONTRACTOR is responsible for verifying that all disposal and recycling sites utilized in the completion of this project are properly licensed.

Table 3. Disposal Matrix for Materials

Material	Disposal Contact or Facility
Ash and Debris	Operation Section Chief will be responsible for identifying the appropriate facility which requires disposal as a hazardous asbestos containing waste. This material will be disposed at the Recology Hay Road Landfill in Solano County.
Soil and Debris	Operations Section Chief will be responsible for identifying the appropriate facility. This material will be disposed of as a non-hazardous solid waste at the Recology Hay Road Landfill in Solano County.
Demolition Debris (Damaged Homes)	CONTRACTOR will be responsible for identifying the appropriate facility.
Trees and Vegetation	CONTRACTOR will be responsible for identifying the appropriate facility.
Metal Debris	CONTRACTOR will be responsible for identifying the appropriate metal recycler.
Metal Discards (Appliances)	Freon Extraction is REQUIRED for refrigerators. Check with above metal recyclers to determine if they are in compliance with the Metallic Discard Act. Note: Furnaces shall be checked for asbestos before disposal.
Vehicles and Trailers	Vehicles and/or trailers that did not sustain damage or vehicles and/or trailers that sustained minor damage will be left on the property. These vehicles and/or trailer may be moved by the CONTRACTOR to complete the debris removal.
Tires	CONTRACTOR will be responsible for identifying the appropriate facility
Other Hazardous Waste	CONTRACTOR will be responsible for identifying the appropriate facility.

Table 3. Disposal Matrix for Materials Cont.	
Material	Disposal Contact or Facility
Household Hazardous Waste (HHW)	**Unlikely.** The County of San Mateo has performed a HHW sweep of the impacted area. If HHW is discovered the HHW will be segregated by the CalRecycle and/or the CONTRACTOR to a temporary on-site storage. As necessary the County of San Mateo will collect and transport HHW to the County facility @ no charge to CalRecycle and or CONTRACTOR.
Human Remains	CalRecycle will coordinate with the City and County to locate any human remains. If human remains are located the work will stop and CalRecycle will contact the County. Due care of the remains will be taken.
Dead Animals	If dead animals are discovered, they will be disposed of with the ash and debris, unless directed by the homeowner.
UXO (Unexploded Ordinance)	**Unlikely.** With the high temperatures from a forested wildland fire the likelihood of discovering any UXO is remote. If UXO is discovered the CONTRACTOR shall notify CalRecycle so proper disposal can occur by the County of San Mateo Sheriff Department. Small arms ammunition may be found in the damaged homes.
Radioactive Debris	**Unlikely.** All impacted lots will be screened for radiation before removal. If radioactive debris is encountered, the material will be removed and properly disposed of by CalRecycle and its CONTRACTOR.
Medical Waste	**Unlikely.** If medical wastes are discovered, they will be properly bagged and transported to the appropriate facility by CalRecycle and its CONTRACTOR. Small quantities of sharps (e.g., needles and illegal drug items) will be removed and disposed of through CalRecycle and its CONTRACTOR. Operations Section Chief will use sharp —mail-back‖ containers provided by CONTRACTOR.

2.3.1 Schedule

Prior to beginning work, CONTRACTOR shall submit a proposed schedule of operation.

2.3.2 Sequence of Operation

Scheduling and coordination of construction activity shall be the sole responsibility of CONTRACTOR within the following limitations:

- CalRecycle and the County of San Mateo will determine which zone the CONTRACTOR will begin work. Three zones (Zone A, Zone B, Zone C) have been identified. (See Appendix C)
- CONTRACTOR shall employ the sequence of removal activity designed by the Operations Chief and described within this document.
- CONTRACTOR will verify appropriate rights to enter have been obtained and all necessary testing and documentation have been completed prior to implementing any phase of removal activity.
- All work shall be performed between the hours of 7:30 A.M. to 6:00 P.M., Monday through Saturday, unless authorized by the Operations Section Chief and the County of San Mateo. A daily briefing will commence at the staging area at 7:30 AM every day of operation.
- All construction equipment working within the residential zones shall maintain a speed of **10 mph or less**.

2.4 General Conditions

Notices

The following notices, at a minimum, will apply to the project:

- The CONTRACTOR shall notify Underground Services Alert (USA) at least 48 hours prior to any excavation;

- The CONTRACTOR shall notify the local fire department prior to commencement of work;

- The CONTRACTOR shall notify the local power provider prior to removal of any damaged structure to ensure the electrical power has been shut off;

- The CONTRACTOR shall contact all local utilities and acquire their shut off plans for utilities at the destroyed structures;

- The CONTRACTOR shall notify CalRecycle at least 48 hours prior to commencement of the cleanup project. CONTRACTOR will use caution around all trees. Only trees identified and marked by a registered forester may be removed; and

- If CONTRACTOR discovers household hazardous materials, the material will be segregated by the CalRecycle and/or the CONTRACTOR to a temporary on-site storage. As necessary the County of San Mateo will collect and transport HHW to the County facility @ no charge to CalRecycle and or CONTRACTOR.

2.4.2 Dust Controls

The CONTRACTOR shall provide water or dust palliative, or both, to prevent dust nuisance at each site. ***Dust resulting from Contractor's performance of the work shall be controlled at all times during this project***. The Contractor will provide fire grade firefighting nozzles with shut off valves for dust control. Each removal crew will be provided at least one fire nozzle. These types of fire nozzles in past projects have proven successful in applying the appropriate amount of water to control dust.

2.4.3 Pre-Watering

The CONTRACTOR shall pre-water each impacted lot 48 to 72 hours in advance of the removal. The water shall be applied in a manner so not to generate significant runoff. Water may be applied using side spray from a water tender, hose line, or other method approved by Operations Section Chief.

2.4.4 Waste Load Controls

All loads shall have a tracking system to indicate material leaving the site.

All loads shall be wetted down before leaving the site. All loads shall be covered with a tarp; this includes metal debris. Concrete loads are exempt from a tarp provided the loads are wetted prior to leaving. If concrete loads generate dust, then the loads must be wetted and tarped.

2.4.5 Cost Controls

CONTRACTOR and the Operations Section Chief shall update cost tracking of the removal on a weekly basis. The CONTRACTOR will be responsible for establishing a cost tracking spread sheet and system. For each property, the CONTRACTOR will track all direct labor, equipment, disposal, transportation, and erosion costs.

2.4.6 Traffic Control

The CONTRACTOR will provide for all traffic controls established in the site specific health and safety plan and the community health and safety plan. Traffic controls and warnings standard to the construction industry and as required by the State of California motor vehicle code will be implemented on an as needed basis. Vehicles utilized for debris removal will be of legal weight according to the Cal/Trans State Standard Specifications (2002 Edition), Section 7-1.08 —Public Conveyance‖, Section 7-1.09 —Public Safety‖, Section 12 ‖Construction Area Traffic Control Devices‖. A traffic control plan for the project areas will be submitted prior to work being performed, and will be reviewed and approved by the Pacific States Environmental Contractors, Inc. project construction manager (CM). Traffic plans will be updated as needed to adjust for changing conditions on site and in the community. Updated traffic plans will be reviewed by the appropriate City representatives and communicated to all project personnel through the Daily Incident Action Plan.

The CONTRACTOR will also establish additional traffic controls as needed to control site vehicle traffic during specific site activities such as equipment movement, press events or visits by dignitaries.

2.4.7 Equipment Controls

All removal equipment supplied by the CONTRACTOR should have glass enclosures and weigh less than 80,000 lb. The goal is to use equipment that minimizes the impact to the local roadway while completing the removal. For example, excavators should be smaller than or equal to a 330 Caterpillar or equivalent and front end loaders should be small than or equal to a 950 Caterpillar or equivalent.

2.4.8 Pavement and Drainage Projections

The CONTRACTOR at all times will protect the edge of pavement and county drainage features to the extent feasibly possible.

2.4.8.1 Trackout Management

CONTRACTOR will implement procedures to prevent or cleanup carryout and trackout as specified below. The use of blower devices, or dry rotary brushes or brooms, for removal of carryout and trackout on public roads is expressly prohibited. The removal

of carryout and trackout from paved public roads does not exempt an owner/operator from obtaining state or local agency permits which may be required for the cleanup of mud and dirt on paved public roads.

- The CONTRACTOR shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of a site and at the minimum remove all other visible carryout and trackout at the end of each workday.
- Cleanup of carryout and trackout shall be accomplished by:
  - Manually sweeping and picking-up; or
  - Operating a rotary brush or broom accompanied or preceded by sufficient wetting; or
  - Operating a PM10-efficient street sweeper

2.4.9 Environmental Consultant Tasks

The CONTRACTOR shall employ third party environmental consultants to perform an environmental assessment of the impacted area. The assessment will include but is not limited to:

2.4.10 Determining Background Soil Metals Concentrations

A third party consultant will prepare a background soil analysis in the fire area to examine the naturally occurring metal concentrations for comparison with the confirmation sampling. All the background samples will be submitted to a California-certified laboratory and analyzed Title 22 metals (antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc) by EPA Method 6010 and mercury by EPA Method 7471A.

2.4.11 Radiological Monitoring

While unlikely to be an issue, a third party consultant shall perform a radiological survey around the impacted structures. The survey equipment should be designed for general radiological surveying such as a Ludlum 2241 or equivalent. CalRecycle will provide the calibrated radiological equipment to the consultant for the duration of the project.

The action level for this project is set at two times background. Should a level of 2x background be detected, the surveyor will isolate (i.e., cordon off) the area and notify the Operations Section Chief and/or County of San Mateo, Environmental Management.

2.4.12 Site Assessment

To prepare each property for cleanup, an approved third party environmental consultant will perform a site documentation on all the impacted lots. Site documentation will include photographic records as described in 2.4.9.4 and foundation verification as described in 2.4.9.5 and additional data as determined necessary by the Operations Chief.

2.4.13 Site Photo Logs

The Consultant will take a minimum of four photographs from all sides of the impacted structure. Additional photos should also be collected of other structures and vehicle if not shown in the original photos. The Consultant will collect a minimum of two other photos showing the location of the confirmation samples.

2.4.14 Foundation Verification

The Consultant will contact the County of San Mateo Building Department and coordinate a foundation investigation. The purpose of the investigation is to determine the previous square footage of the home. The Consultant will be responsible for providing the measurements of the foundation, piers, sheds, or other structures to the County. The Consultant will measure and record the dimensions of the burned structure footprint at each property, measure and record the dimensions of the ash area footprint at each property, and monitor the ash at each property for radioactivity with field monitoring equipment provided by CalRecycle.

2.4.15 Asbestos Survey

The consultant will perform a bulk asbestos survey of each lot. Should any visible asbestos be discovered, the material will be properly segregated and removed.

2.4.16 Confirmation Sampling

The consultant will collect at least two confirmation soil samples from each property unless the structure is a shed or other impacted area. Should the impacted area be greater than 2,000 sq. ft. then one additional sample per 1000 sq. ft. of contamination (e.g., 3 per 3,000 sq. ft., 4 per 4,000 sq. ft., etc.) will be collected. The samples will be submitted to a California-certified laboratory and analyzed for Title 22 metals (antimony,

arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc) by EPA Method 6010 and mercury by EPA Method 7471A.

2.4.17 Site Approval

The Consultant will assist in establishing cleanup goals for the project. The Consultant will evaluate the analytical results by comparing the soil sampling results to the pre-determined background concentrations and cleanup goals, assist in determining whether additional excavation is necessary at each property based on the confirmation soil sampling results, and coordinate with CalRecycle and Contractor, if appropriate, to conduct additional removal activities. The Consultant may need to collect additional confirmation soil samples, as needed.

2.4.18 Final Reports

The CONTRACTOR or his third party consultant will prepare and submit a report for each property to CalRecycle summarizing the data evaluation, a final project report and develop a cost analysis formula to assist with the cost recovery of insurance and/or other funds. Final Reports are described in detail in section 3.3 of this document.

2.5 Safety

The CONTRACTOR shall, at all times, operate equipment and perform labor in a safe manner to ensure the safety of its employees and the public. CONTRACTOR must pay particular attention to operations around local roads and take the necessary precautions. CONTRACTOR must note the number of power lines crossing the site, dead trees, chimneys, and all underground utilities.

The CONTRACTOR shall employ a third party certified industrial hygienist to develop a site specific health and safety plan for the entire State Sponsored Removal operation. The industrial hygienist consultant will also provide field oversight to ensure compliance with the health and safety plan, prepare an air monitoring plan, and prepare final report summarizing the air data.

The CONTRACTOR will designate eating areas and supply a hand and eye washer and mobile sanitary facilities for each project site.

2.5.1 Worker Safety

Given that ash may contain elevated levels of heavy metals and/or asbestos, an exclusion zone will be set up around each home site during removal. All personnel entering this area will be required to wear level -Cǁ protective attire.

2.5.2 Industrial Air Monitoring

The CONTRACTOR shall use a certified industrial hygienist to perform air monitoring for the duration of the project or until the industrial hygienist determines the site air monitoring may cease. The methods for the air monitoring are as follows:

- Fugitive Dust - U.S. EPA approved equivalent methods for PM 2.5 and PM10 monitoring
- Heavy Metals - National Institute for Occupational Safety and Health (NIOSH) Method 7300, Metal Scan; and
- Asbestos - National Institute for Occupational Safety and Health (NIOSH) Method 7402, High Volume.

2.6 Special Provisions

2.6.1 Appliance and Vehicle Recycling

CONTRACTOR or its subcontractor shall provide for removal and disposal of material that may require special handling, such as various automobile or appliance components.

Materials that must be removed from appliances and vehicles prior to crushing, baling or shredding for recycling include, but are not limited to:

- Chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), and hydrochloroflourocarbons (HCFCs) used as refrigerants.
- Polychlorinated biphenyls (PCBs) known to be contained within motor capacitors and fluorescent light ballasts.
- Used oils as defined in Article 13 of Chapter 6.5 of the Health and Safety Code (includes lubricating fluids, compressor oils, and transmission oils).

- Sodium azide canisters in unspent automobile air bags.
- Antifreeze in coolant systems.
- Mercury that may be found in thermometers, thermostats, barometers, electrical switches, and batteries.

The CONTRACTOR shall maintain accurate records detailing the removal and disposal operations involving all such materials, and shall provide the Operations Section Chief with all manifests and/or documentation pertaining to the work. Vehicles and appliances that were completely consumed by the fire will probably not contain any of the above items. The vehicles and appliances will be treated as metal debris and removed accordingly.

2.6.2 Household Hazardous Waste (HHW) Handling

The County of San Mateo and Department of Toxic Substances Control have performed a sweep of the impacted area to identify and remove any Household Hazardous Waste (HHW). If HHW is discovered during operations, the HHW will be segregated by the Operations Section Chief, its Health and Safety Consultant, or the CONTRACTOR to a temporary on-site storage. As necessary the County of San Mateo will collect and transport HHW to the County facility at no charge to CalRecycle and/or the CONTRACTOR.

To identify HHW or other hazards in the field the following color code and action has been established. If a questionable item is discovered that can not be immediately identified for removal from the waste stream then the hazardous item will be marked with bright orange spray paint to indicate a possible hazard. Once the item has been checked by a qualified individual and deemed not a hazard (e.g., propane tank without a valve), then the item will be marked with bright green spray paint with the words —O.K.‖ or two stripes.

Potential Hazard	Material Safe for Normal Disposal
Bright Orange Spray Paint	Bright Green Spray Paint

2.6.3 Potential Earthwork

No more than 50 cubic yards of clean soil will be placed on any one site without written authorization from the County of San Mateo and Operations Section Chief. If more than 50 cubic yards of material are necessary the CalRecycle engineer will apply for a grading permit. If fill material is necessary the soil shall be placed in thin lifts. Lifts shall not exceed 8 inches un-compacted and shall be applied within 3 percent of optimum

moisture content or as directed by the Operations Section Chief. The lift shall be compacted with a target compaction of 90 percent of the maximum dry density as determined by ASTM D 1557.

2.6.4 Debris and Tree Removal in Public Areas

The public areas (playground and park) adjacent to home sites are under the jurisdiction of the City of San Bruno. The City requested debris and tree removal within these areas is included in the project. The City has retained a professional forester to evaluate the area and identify the scope of tree removal on City property. If approved, the CONTRACTOR will conduct debris removal consistent with the process for private home sites, with the exclusion of erosion control. All erosion control on City property, including design, monitoring, and maintenance, will be conducted by the City of San Bruno.

2.6.5 Project Signs

Notification Sign (Not Required)

Address Sign (County of San Mateo)

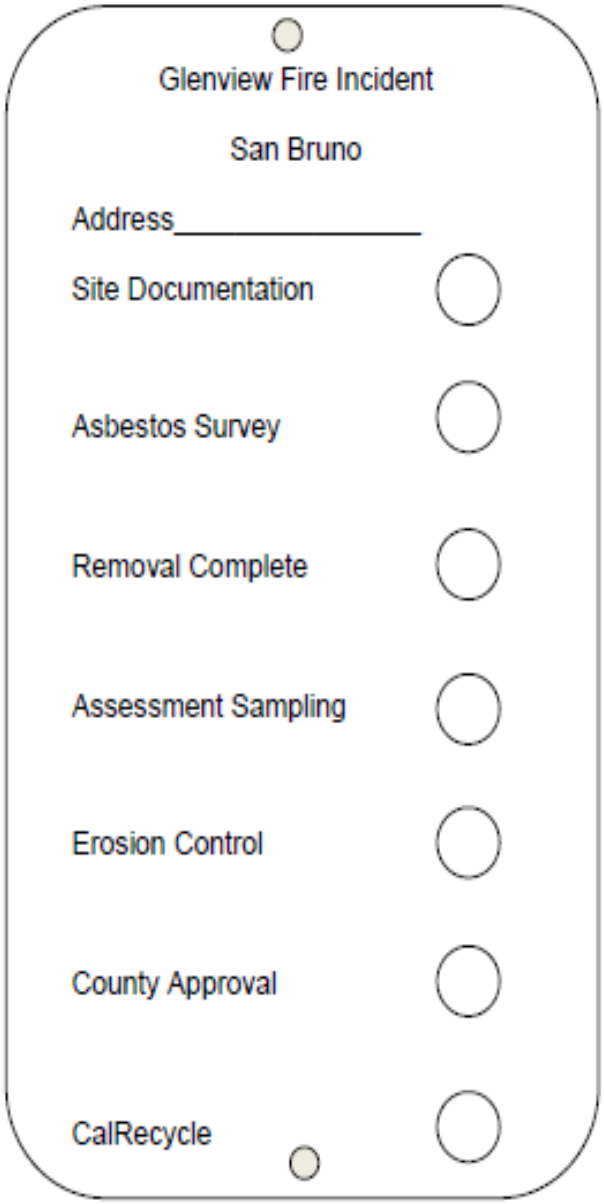
A maximum of 40 reflective aluminum address signs will also be required. The sign dimension should be 6 inches in width and 24 inches in height. The edges shall be round and free of sharp edges. The background shall be a reflective green and all the text shall be a reflective white. The County of San Mateo will reestablish all address. Each sign shall be mounted on a 6 foot pre-drill, u-channel steel post. The numbering for the address shall be at minimum of 4 inches in height.

Example:

Project Sign and Labels

A total of (TBA – max 40) white signs will also be required. These signs will be used for the coordination of the project with the various agencies. During the project, each phase will be signed off on the sign to indicate progress. Each sign will be 12 inches in width and 18 inches in height. The sign shall be made of aluminum and edges shall be round and free of sharp edges. The background shall be white and all the text shall be black. A sample sign is provided below. The CONTRACTOR shall also supply the necessary project supplies to produce the labels. The Operations Section Chief will provide the design for each label.

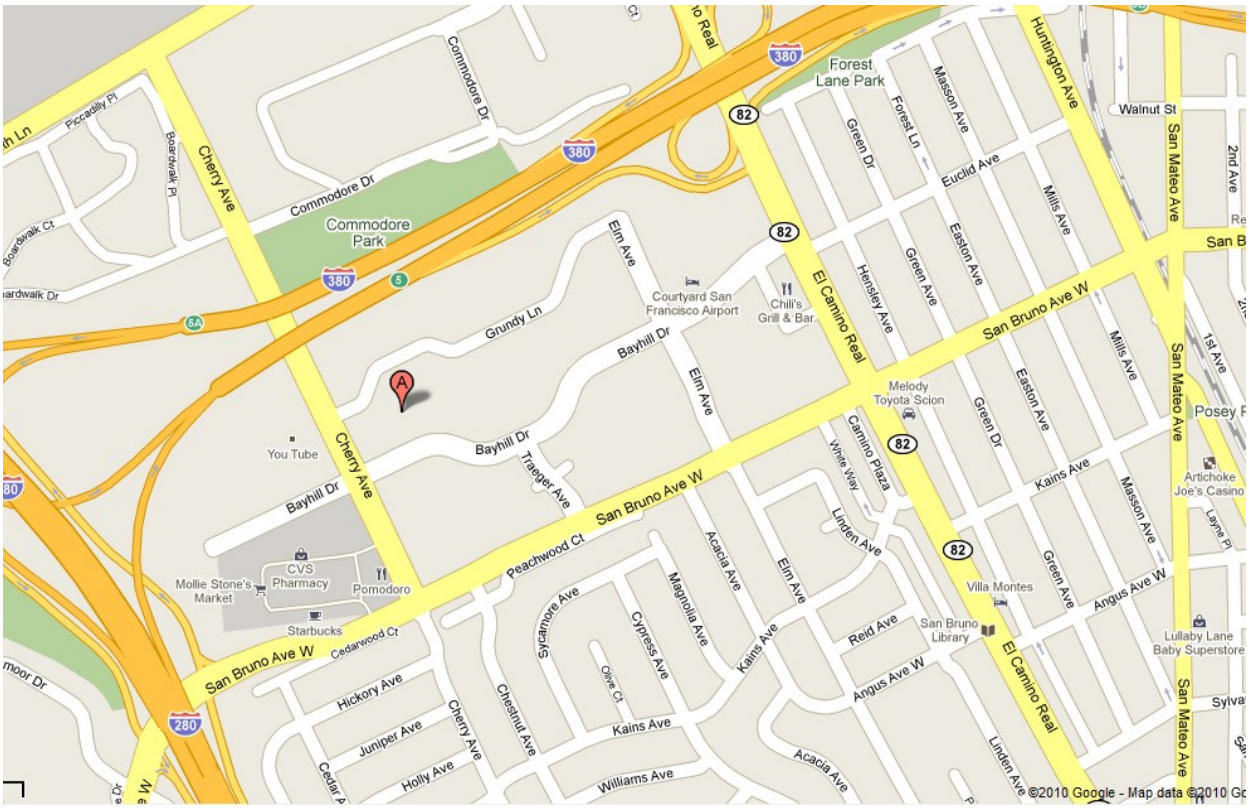
Example Sign Labels and Project Sign



2.6.6 Debris Removal Operations Center (DROC)

The CONTRACTOR shall operate and maintain a debris removal operations center (DROC) for the incident and a field operations center with adequate equipment staging area until the Operations Section Chief has directed the CONTRACTOR to demobilize the operations center. The DROC will be located at 900 Cherry Lane, 3rd Floor, San Bruno, California. The field operations center and staging area will be located on Glenview near the entrance to the incident area. At the field operations center, the CONTRACTOR will provide temporary fencing with a lockable gate, office trailer, site generator, sanitation facilities, 10 cubic yard waste bin and the other field items identified by the Operations Section Chief in writing. The CONTRACTOR will also supply the necessary office supplies, fax machines, copiers, drinking water, electrolyte fluids, electricity, and other services to maintain the field operations center. Figure 5 provides a location of the operations center.

Figure 5. Debris Removal Operation Center Location, 900 Cherry Lane, San Bruno



2.7 Hazard Tree Identification and Removal

A registered forester will perform an assessment of all trees in the impacted area and identify those trees which pose a hazard and must be removed. The objectives of the tree and assessment and inventory will include:

- Identification of all trees damaged by the explosion,
- GPS assessment of their individual locations,
- Assessment of the damage to each tree,
- Assessment of the survivability of each tree,
- Assessment of each tree against established indicators of hazardous tree criterion, and
- Determination if each tree should be removed during recovery efforts conducted by Cal Recycle.

Following identification and marking of hazardous trees and only after removal activities are complete and confirmation sampling has been taken, the CONTRACTOR, or an approved subcontractor, will remove trees employing all operational controls to mitigate dust generation and ensure site safety protocols.

2.8 Erosion Control

Erosion control for this project is critical for the success of this project. Erosion Control shall be installed after the lot has met the site specific cleanup goals. Prior to the removal of the structure, some erosion control will be necessary to prevent the migration of contaminates off site. Work may consist of installing silt fences, fiber rolls, erosion control blankets and other erosion control Best Management Practices (BMPs) necessary for improving site stability. Erosion control work shall be performed in accordance with the specifications and as directed by Operations Section Chief.

2.8.1 Erosion Control Specifications

The specifications for erosion control were based on the slope of each lot and proximity of the stream environment zone (SEZ). Each residential parcel will receive one of the following BMP treatments:

Level 1

Mulch

Mulch shall be between 4 to 6 inches in depth and cover over 90% of the lot impacted by the structural debris.

Level 2

Mulch and Fiber Log and/or Silt Fence

Fiber Logs shall be a minimum of 12ǁ in diameter and shall be double-staked and keyed in. Silt Fences shall be wire-backed and used in areas on slopes greater than 7%.

Level 3

Mulch, Fiber Log and/or Silt Fence and Erosion Control Blanket

Level 4

Site Specific Treatment – consult with local agencies.

Additional erosion control specification may be developed after consultation with local agencies.

2.8.2 Erosion Control Materials

Materials shall be placed in accordance with the debris management plan or as specified by the Operations Section Chief. The following materials have been identified for the removal:

- Fiber bundles;
- Erosion Control Blankets;
- Silt Fence;
- cubic yards of class II road base or equivalent; and
- cubic yards of rock and/or cobble for erosion control

Quantities and location of the materials will be determined in the field by the Operations Section Chief.

Fiber Roll Barriers – Fiber roll barriers (also called sediment logs or straw wattles) are commercially manufactured and usually consist of milled wood or other natural fibers sewn into a circular weave fabric. Fiber rolls are good perimeter protection, designed to slow storm-water runoff and trap small amounts of sediment.

Fiber rolls shall be a minimum 12ǁ diameter.

Erosion Control Blanket – Erosion control blanket is a manufactured blanket or mat that is designed to hold soil and seed in place on slopes. It consists of organic, biodegradable materials such as wood fiber, coconut fiber, or a combination of these materials. It is commercially manufactured and delivered to the site in rolls.

> Erosion control blankets shall be 100% organic biodegradable (including parent material, stitching, and netting). The minimum thickness shall be 3/8‖ (9mm). The netting shall be stitched to prevent separation of the net from the parent material. The netting shall be capable of withstanding moderate foot traffic without tearing or puncturing. Neither the netting, nor the installation, shall pose a safety risk to people walking on/crossing over it. Neither shall the blanket or netting pose a hazard to wildlife such as birds, reptiles and amphibians.

Appropriate products include, but may not be limited to:

- Curlex I Fibernet (American Excelsior)
- Curlex II Fibernet (American Excelsior)
- AEC Premier Straw Fibernet (American Excelsior)
- S 75 BD (North American Green)
- S 150 BN (North American Green)
- SC 150 BN (North American Green)
- C125 BN (North American Green)
- Excel S-2 All Natural (Western Excelsior)
- Excel SS-2 All Natural (Western Excelsior)
- Excel CS-3 All Natural (Western Excelsior)
- Excel CC-4 All Natural (Western Excelsior)

Silt Fence – Silt fence consists of a permeable filter fabric that is keyed into the ground and staked beyond the toe of a slope. The fabric pools runoff, causing entrained sediment to settle out behind the fence while water slowly filters through the fabric.

Anchors – Anchors are devices that secure erosion control materials such as fiber roll barriers, erosion control blankets, and silt fence in place.

For erosion control blankets, anchors shall be completely biodegradable, environmentally safe, and shall have no potential for soil and/or water contamination. Steel wire pins or staples will not be approved. Petroleum based plastics or composites containing petroleum based plastics will not be approved. Materials deemed to present a hazard from splintering or spearing will not be approved. Wood stakes or stakes manufactured from wood byproducts may be approved.

Appropriate products include, but may not be limited to:

- E-Staple (American Excelsior)
- CF Bio Staple (CFM Corp)
- Green Stake (Green Stake)
- Bio-Stake (North American Green)
- Enviro-Stake (ODC Inc)

For silt fence, anchor posts shall be at least 36ll long. Steel posts should weigh no less than one pound per linear foot.

For fiber roll barriers, stakes shall be wooden and at least 18ll long.

Netting – Netting is a manufactured product intended to secure wood chips or pine needle mulch to the soil surface.

Netting shall be 100% organic biodegradable and may consist of paper, jute, or cotton netting. Netting material shall be approved by CalRecycle staff prior to installation.

Gravel Bags – Gravel bags are intended to slow storm-water flows and trap sediment on paved surfaces.

Gravel bags shall be filled with ¾ll to 1½ll *washed* rock. Bags filled with sand will not be approved.

2.8.3 Installation Standards

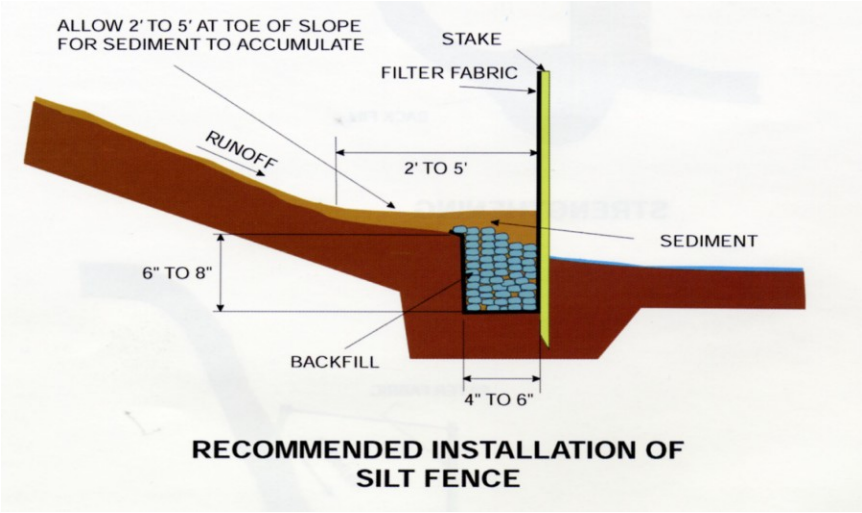
Erosion control BMPs installation shall consist of furnishing and applying erosion control materials. The work includes proper material handling, area preparation, proper application of the erosion control materials and structures, and stand maintenance for the areas shown on the Plans.

Area Management – Construction/demolition materials shall be stored to the maximum extent possible on paved surfaces. When this is not possible, construction/demolition materials shall be stored on areas where a future structure or other hard impervious surface will be constructed, such as a future building foundation or driveway.

Construction/demolition vehicles shall remain on paved surfaces to the maximum extent possible. When this is not possible, construction/demolition vehicles shall be used in areas where rebuild of impervious surfaces will occur, such as building foundation or driveway locations.

Silt Fence – Install silt fences as directed by the Operations Section Chief. Six inches of the fence shall be buried in a trench along the base of the fence. The posts shall be spaced a maximum of 10 feet apart and driven 18‖ into the soil or to refusal. Sediment shall be removed from the up-slope side of the fence when it reaches 1/3 the height of the fence. Refer to standard detail —Silt Fence‖ below.

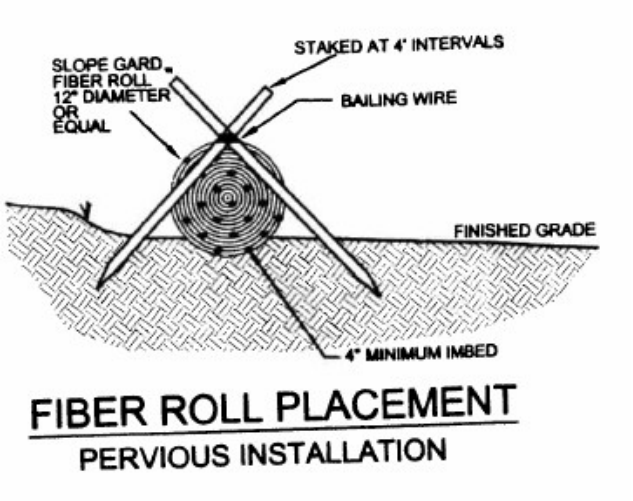
Figure 6. Silt Fence Detail Drawing



Erosion Control Blanket – Install erosion control blankets as directed by the Operations Section Chief. Starting at the top of the slope, anchor the blanket in a 6-inch trench, backfill, and securely tamp the backfilled soil. Unroll blanket down-slope overlapping parallel and subsequent blankets a minimum of 4 inches. Secure blankets with anchors along the overlaps and place a minimum of 3 anchors per square yard. CONTRACTOR shall determine if more anchors are required and shall be responsible for installing the erosion control blanket so that it will stay in place.

Fiber Roll Barriers – Install 12-inch fiber roll barriers as directed by Operations Section Chief. Place the fiber roll barrier in a 4-inch trench perpendicular to the flow path of storm-water. Drive stakes on either side of the roll and bind together with bailing wire. Weighted rolls may be used as appropriate, especially on driveways. Refer to standard detail —Fiber Rollǁ below.

Figure 7. Fiber Roll Detail Drawing



Gravel Bags – Gravel bags or weighted fiber rolls shall be placed on the down-slope edge of impervious surfaces, such as driveways. Place gravel bags in double row in a —Uǁ shape.

2.9 Permits

To provide an understanding of the permits necessary for CONTRACTOR to obtain for the project, Table 4 is presented.

Table 4. Permit Matrix

Permit and Agency	Responsibility	Contact/Comments
Site Authorization Right-of-Entry	County of San Mateo	Prior signatures by property owners will be required before work
California Environmental Quality Act-	Not Applicable	Projects undertaken, carried out, or approved by a public agency to maintain, repair, restore, demolish or replace property or facilities damaged or destroyed as a result of a disaster are exempt from CEQA. Public Resources Code, §§ 21080(b)(3), 21172; see also, 14 CCR 15269(a).
1601 Stream Alteration, Dept. of Fish and Game (DFG)	CalRecycle	Except for removal of burned trees, the project does not include work in the stream bed. CalRecycle will consult with the Department of Fish and Game as to the applicability of a 1601
Storm Water Pollution Prevention	CalRecycle/City	Best Management Practices will be required.
Road Encroachment	CalRecycle and CONTRACTOR	Emergency work. The CONTRACTOR will obtain a general permit for the fire

		area.
Table 4. Permit Matrix cont.		
Permit and Agency	Responsibility	Contact/Comments
Grading	Not Applicable	Soil import will be kept to a maximum of 50 cy per home.
Traffic Control	CONTRACTOR	CONTRACTOR will supply necessary signage as appropriate. Additional control devices may be necessary based on site conditions
Asbestos Notification	CONTRACTOR	CONTRACTOR will make the appropriate notification
Demolition Permit	County of San Mateo	CONTRACTOR will obtain from the Co. of San Mateo
Water Permit	CONTRACTOR	CONTRACTOR shall obtain the necessary water permit to be used for dust suppression
Hazardous Waste	CONTRACTOR	CONTRACTOR shall use the appropriate hauler and disposal facility

3 Project Completion

The project will be considered complete after each lot has been compared to cleanup goals and approved by the unified command of County of San Mateo and CalRecycle, erosion control placed, final observations are documented, and the invoicing and final reports are provided to the property owners.

3.1 Cleanup Goals

The cleanup goals for the Glenview Incident Debris Removal Project are based on the CalEPA, Department of Toxic and Substances Control, California Human Health Screening Levels (CHHSL; 2005, updated 2010) and the local background concentration of metals in soils. The CHHSLs are used to evaluate the potential for soils to pose a health risk to residents. The cleanup goals were developed by first determining the local background concentration for metals in soil and comparing those naturally occurring metal concentrations to the CHHSLs. If the concentration of a background metal falls below an established CHSSL, the cleanup goal is based on the CHSSL. If the concentration of a background metal exceeds the CHHSL for a specific metal then the cleanup goal for that specific metal will be set at two times the naturally occurring background concentration. Background concentrations will be determined using public domain U.S. Environmental Protection Agency Pro UCL 4.0 software as twice the 95th percentile threshold.

To assess the effectiveness of the ash and debris removal, all confirmation samples will be compared to the cleanup goals. A parcel will be approved if the analytical results are below the cleanup goals. If a CHHSL metal result exceeds the cleanup goal then three additional samples from the same container will be reanalyzed. If one of the samples exceeds the goal then the property will be again excavated at the direction of the Operations Section Chief. Once the excavation is complete additional confirmation samples will be collected. If a background metal exceeds the cleanup goal, an individual site specific determination will be made by the Operations Section Chief. Table 5 provides the cleanup goals for the Glenview Incident Debris Removal.

Table 5. Cleanup Goals for Metals in Soil, Glenview Fire Site

Analyte	CHHSLs for Residential Use[2] (mg/kg)	2 X the ProUCL Calculated Background Concentration (distribution based on 95th percentile)[1] (mg/kg)	Cleanup Goals for Soil at the Glenview Fire Site (mg/kg)
Antimony	30	ND	**30**
Arsenic	0.07	14	**14**
Barium	5,200	266	**5,200**
Beryllium	16	2.4	**16**
Cadmium	1.7	ND	**1.7**

Analyte	CHHSLs for Residential Use[2] (mg/kg)	2 X the ProUCL Calculated Background Concentration (distribution based on 95th percentile)[1] (mg/kg)	Cleanup Goals for Soil at the Glenview Fire Site (mg/kg)
Chromium	100,000	296	**100,000**
Cobalt	660	36	**660**
Copper	3,000	65	**3,000**
Lead	80	38	**80**
Mercury	18	ND	**18**
Molybdenum	380	ND	**380**
Nickel	1,600	258	**1,600**
Selenium	380	ND	**380**
Silver	380	ND	**380**
Thallium	5	ND	**5**
Vanadium	530	142	**530**
Zinc	23,000	134	**23,000**

Notes:

[1] ProUCL: Statistical software used to calculate background threshold values (Singh et al, 2010)

[2] California Human Health Screening Level; Cal-EPA, September 2010

Cal-EPA = California Environmental Protection Agency

CHHSLs = California Human Health Screening Levels

mg/kg = milligrams per kilogram

ND = not detected

3.2 Field Documentation

The Operations Section Chief will document the erosion control for each lot not building this winter. Additionally the Operations Section Chief will document the final site conditions at the close of the project.

3.3 Documentation

The environmental consultant will also be responsible for designing a final report to document each property cleaned up in CalRecycle sponsored cleanup. The report will document the removal with photo documentation, foundation square footage, impact from ash foot print (i.e., ash square footage), soil confirmation analysis, and total costs.

APPENDIX A
OFFICE OF THE GOVERNOR
EXECUTIVE ORDER S-14-10

WHEREAS due to the destruction caused by an explosion and fire on September 9, 2010, I have proclaimed a State of Emergency to exist in the County of San Mateo; and

WHEREAS the explosion and fire caused harm to people and property, damaged or destroyed numerous homes and other structures, forced evacuations, interrupted utility service and may have caused damage to resources and the environment; and

WHEREAS the explosion and fire caused the loss of valuable personal and business records; and

WHEREAS the people who lost or sustained damage to their homes, property, businesses or places of employment, may need to obtain or replace important government records such as certificates of birth, death, fetal death, or marriage, as well as marriage dissolution records, driver's licenses, identification cards, vehicle registration certificates, and certificates of title, in order to obtain assistance from federal, state and local governmental agencies, make claims for and collect insurance, find new employment, and for other purposes related to losses suffered in the explosion and fire; and

WHEREAS those who need to obtain or replace important government records to mitigate their losses and rebuild their lives as a consequence of the explosion and fire require immediate assistance from state and local governmental agencies to replace those records; and

WHEREAS existing law requires the Office of Vital Records of the Department of Public Health, along with local registrars, county recorders and county clerks, to impose fees upon persons requesting copies of certificates of birth, death, fetal death, marriage, and marriage dissolution records; and existing law requires the State Department of Motor Vehicles to impose fees upon persons requesting replacement driver's licenses, identification cards, vehicle registration certificates, and certificates of title; and

WHEREAS existing law requires the State Department of Motor Vehicles to impose late fees on persons who are late in renewing their vehicle registration or late in transferring ownership of a vehicle; and

WHEREAS workers are, or may be, unemployed as a result of the explosion and fire and are in need of immediate financial assistance; and

WHEREAS the suspension of the statutory one-week waiting period for unemployment insurance applicants who are unemployed due to the explosion and fire would provide these unemployed workers with immediate financial assistance; and

WHEREAS Local Assistance Centers can assist with the coordination of aid and expedite disaster assistance to those affected by an emergency.

NOW, THEREFORE, I, ABEL MALDONADO, Acting Governor of the State of California, in accordance with the authority vested in me by the Constitution and statutes of the State of California, including the Emergency Services Act and in particular Government Code sections 8567 and 8571, do hereby issue this Executive Order, effective immediately, to mitigate the effects of the emergency due to the explosion and fire in the County of San Mateo:

1. The provisions of Health and Safety Code sections 103525.5 and 103625, and the provisions of Penal Code section 14251, requiring the imposition of fees, are hereby suspended with regard to any request for copies of certificates of birth, death, fetal death, marriage, or marriage dissolution records by any resident of San Mateo County who suffered a loss of a family member, or who suffered loss or damage to property, business, or employment as a result of the explosion and fire. Copies of such records shall be provided to such persons without charge.

2. The provisions of Vehicle Code sections 9265(a), 9867, 14901, 14902 and 15255.2, requiring the imposition of fees, are hereby suspended with regard to any request for replacement of a driver's license, identification card, vehicle registration certificate or certificate of title by any resident of San Mateo County who suffered a loss of such documents as a result of the explosion and fire. A replacement driver's license, identification card, vehicle registration certificate, or certificate of title shall be provided to such persons without charge.

3. The provisions of Vehicle Code sections 4602 and 5902, requiring the timely registration or transfer of title, are hereby suspended with regard to any registration or transfer of title by any resident of San Mateo County who suffered a loss of such registration or title documents as a result of the explosion and fire. The time covered by this suspension shall not be included in calculating any late penalty pursuant to Vehicle Code section 9554.

4. The provisions of Unemployment Insurance Code section 1253 imposing a one-week waiting period for unemployment insurance applicants are suspended as to all applicants who are unemployed as a direct result of the explosion and fire in San Mateo County, who apply for unemployment insurance benefits during the time period beginning September 10, 2010, and ending on the close of business on December 10, 2010, and who are otherwise eligible for unemployment insurance benefits in California.

5. The California Emergency Management Agency (Cal EMA) shall coordinate assistance programs offered by all relevant federal, state and local agencies and departments, including, but not limited to, the California Conservation Corps, the Department of Public Health, the Department of Health Care Services, the Department of Mental Health, the Department of Social Services, the Department of Consumer Affairs, the Department of the Highway Patrol, the Department of Forestry and Fire Protection, the Department of Veterans Affairs, the Department of Aging, the Department of Transportation, the Department of Insurance, the Department of Housing and Community Development, the Employment Development Department and California Volunteers.

6. All State agencies with responsibility, regulatory authority, or expertise related to recovery efforts in connection with this explosion and fire shall cooperate fully and act expeditiously in coordination with the California Resources Agency and the California Environmental Protection Agency, to facilitate the mitigation of the effects of the explosion and fire and the environmental restoration of the affected areas.

7. State agencies shall, as necessary for the protection of public health and the environment, assist local governments to enter into contracts and arrange for the procurement of materials, goods, and services necessary to quickly remove dangerous debris, repair damaged resources, and restore and protect the impacted watershed. Because strict compliance with the provisions of the Government Code and the Public Contract Code applicable to state contracts would prevent, hinder, or delay these efforts, applicable provisions of those statutes, including, but not limited to, advertising and competitive bidding requirements, are suspended to the extent necessary to address the effects of the explosion and fire.

8. The Department of Forestry and Fire Protection, the California Department of Corrections and Rehabilitation, and the California Conservation Corps, shall use employees, corps members, inmate and ward labor, where appropriate, to protect public health, safety, and water quality on public lands or where otherwise requested by private property owners.

IT IS FURTHER REQUESTED that the Franchise Tax Board and the Board of Equalization consider using their administrative powers where appropriate to provide those individuals and/or businesses impacted by the explosion and fire with extensions for filing, audits, billing, notices, assessments and relief from subsequent penalties.

This Executive Order is not intended to, and does not, create any rights or benefits, substantive or procedural, enforceable at law or in equity, against the State of California, its agencies, departments, entities, officers, employees, or any other person.

I FURTHER DIRECT that as soon as hereafter possible, this Order shall be filed in the Office of the Secretary of State and that widespread publicity and notice be given to this Order.

IN WITNESS WHEREOF I have hereunto set my hand and caused the Great Seal of the State of California to be affixed this 10th Day of September 2010.

_____
ABEL MALDONADO
Acting Governor of California

ATTEST:

_____
DEBRA BOWEN
Secretary of State

APPENDIX B

RIGHT-OF-ENTRY PERMIT

[For Providing Debris Removal on Private Property]

_____ (–Owner‖), hereby permits the County of San Mateo, its officers, employees, agents, contractors and subcontractors (—County‖), to enter upon Owner's property commonly identified as

_____,

County of San Mateo, State of California (–Premises‖), subject to all licenses, easements, encumbrances, and claims of title affecting the Premises upon the following terms and conditions:

1. Grant of Right-of-Entry. Owner hereby grants County a right-of-entry (–Permit‖) over the Premises for the purpose of inspecting the Premises, testing materials on the Premises, removing and clearing any or all fire-generated debris of whatever nature including but not limited to ash, vehicles, construction debris, trees, waste or other materials from the Premises, subject to the terms and conditions set forth in this Permit. It is fully understood that this Permit does not create any obligation on the County to perform inspection, testing or debris clearance. **Owner understands that the County will undertake no cleanup action until this Right-of-Entry Permit is signed and returned.**

2. Private Insurance Coverage. Most homeowner insurance policies have coverage to pay for the costs of removal of wildfire-generated debris. Owner understands that in the event federal financial assistance is received by the Owner for purposes of inspection, testing or debris removal hereunder, federal law (42 United States Code 5155, et seq.) requires Owner to reimburse the County for the cost of removing fire-generated debris to the extent covered in Owner's insurance policy. Owner also understands that, when requested, Owner must provide a copy of the

insurance policy, proof/statement of loss and settlement agreement from Owner's insurance company to County.

Owner further acknowledges that for consideration received, consisting of the removing and clearing of any or all fire generated debris, trees, waste or other material from the Premises, the County is subrogated to the rights of Owner and Owner transfers and assigns to County the rights of Owner under any policy of insurance which provides coverage for the removal of fire generated debris to recover those amounts which represent the cost of removing fire generated debris directly from the insurance company providing such coverage. This partial assignment is intended to convey to County all of Owner's right, title and interest in the assigned rights under the contract of insurance with full power to collect and bring an action on the assigned portion of the contract of insurance.

Owner (_____ does,_____does not) have homeowners or other similar insurance. If Owner indicates that Owner does not have such insurance, Owner certifies under penalty or perjury that there was no insurance in effect at the time of the fire, which may provide coverage for the costs of inspection, testing or debris removal.

3 Duplication of Benefits. Owner (_____has,_____has not) and (_____ will,_____will not) receive(d) any compensation for debris removal from any other source including Small Business Administration (SBA), individual and family grant program or any other public assistance program. Owner will advise County in writing within 10 days of receipt of any insurance settlements for debris removal. Owner further agrees to reimburse the County within 10 days of receipt of any insurance settlements for debris removal. Owner further agrees to reimburse the County within 30 days of receipt, from such insurance proceeds, for the cost of the debris removal conducted by the County. In the event the insurance proceeds are less than the cost of debris removal incurred by the County, Owner will not be responsible for the difference. If the insurance proceeds exceed the County's cost of debris removal, Owner will keep any excess proceeds. Owner understands that all disaster related funding, including that for debris removal from private property, is subject to audit.

4 Hold Harmless. County shall not be liable for, and Owner shall indemnify and hold harmless the County, the State of California, the City of San Bruno, and any of their officers, agencies, agents, contractors, subcontractors, employees and volunteers, against any and all claims, deductibles, self-insured retentions, demands, liability, judgments, awards, fines, mechanics' liens or other liens, labor disputes, losses, damages, expenses, personal injury, charges or costs of any kind or character, including attorneys' fees and court costs (hereinafter collectively referred to as —Claimsǁ), which arise out of or are in any way connected to actions arising out of this Permit, and hereby release, discharge and waive any claims and action, in law or equity, arising therefore. Owner shall make Owner's best efforts to mark any sewer lines, utilities, septic tanks and water lines located on the Premises.

5 No County Assumption of Liability for Remediation. In consideration of the assistance County is providing to Owner under this Permit, at no cost to Owner, County assumes no liability or responsibility, and Owner shall not seek to recover from County, the United States Government, the State of California, the City of San Bruno or any of their officers, agencies, agents, contractors, subcontractors, employees and volunteers, the costs of any remediation of damages to the Premises incurred due to actions taken pursuant to this Permit.

6 Authority. Owner represents and warrants that it has full power and authority to execute and fully perform its obligations under this Permit pursuant to its governing instruments, without the need for any further action, and that the person(s) executing this Permit on behalf of Owner are the duly designated agents of Owner and are authorized to do so, and that fee title to the Premises vests solely in Owners.

7. Entire Agreement. This Permit constitutes the entire agreement between the parties with respect to the subject matter hereof, and all prior or contemporaneous agreements, understandings and representations, oral or written, are superseded.

8 Modification . The provisions of this Permit may not be modified, except by a written instrument signed by both parties.

9 Partial Invalidity. If any provision of this Permit is determined by a court of competent jurisdiction to be invalid or unenforceable, the remainder of this Permit shall not be affected thereby. Each provision shall be valid and enforceable to the fullest extent permitted by law.

10 Successors & Assigns. This Permit shall bind and benefit the parties and their successors and assigns, except as may otherwise be provided herein.

11 Notices. Any notice required hereunder shall be provided as follows:
For the County:

Name: Dean Peterson

Department: County of San Mateo Environmental Health

Address: 2000 Alameda de las Pulgas, Suite 100

San Mateo, CA 94403

Phone number: (650) 5372-6200

For the Owner:

Name: _____

Address: _____

_____

Phone number: _____

IN WITNESS WHEREOF, Owner and County have executed this Permit effective as of _____(date).

COUNTY: COUNTY OF SAN MATEO A political subdivision of the State of California	OWNER: Property Address: _____ _____

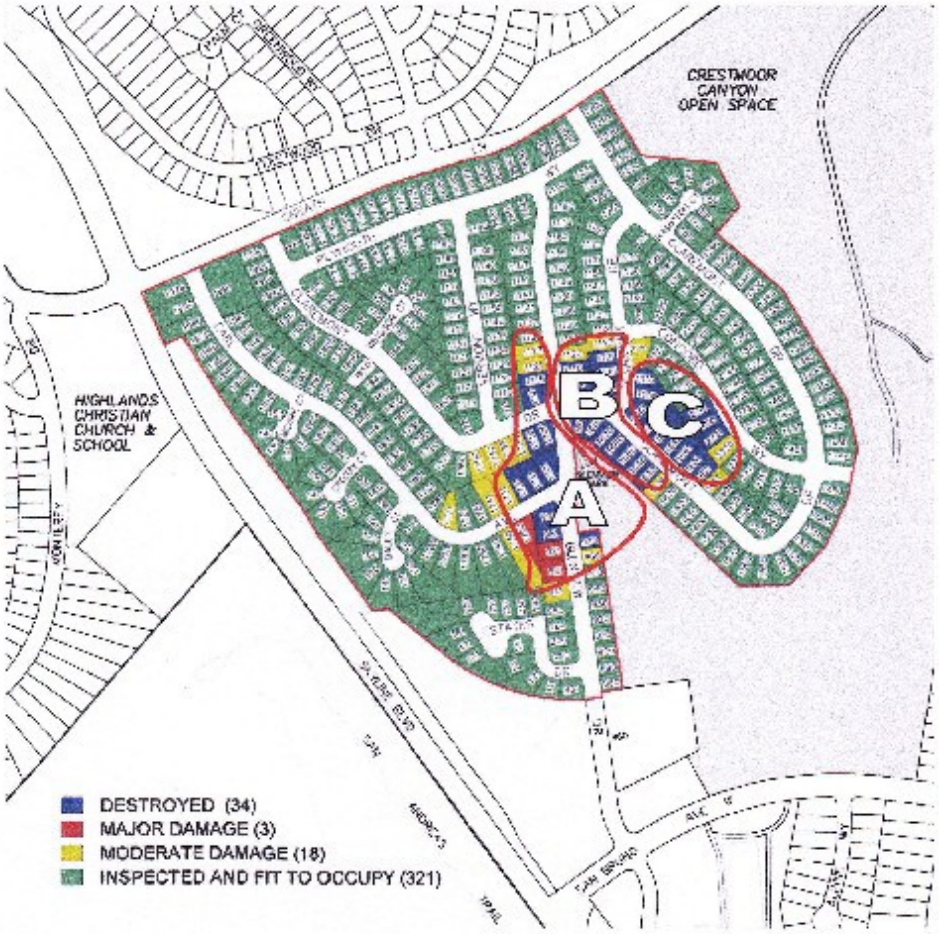
By: _____	By: _____ (signature) Phone #1:_____ Phone #2:_____ Email address: _____

Please supply the following Insurance Information:

Insurance Company: _____ Policy # _____	Agent Name: _____ Agent Phone#:_____

Special Instructions (i.e. gates, locks, major cross streets, and directions contractors will need for site access):

APPENDIX C
WORK ZONES


CRESTMOOR CANYON OPEN SPACE
HIGHLANDS CHRISTIAN CHURCH & SCHOOL
A
B
C
DESTROYED (34)
MAJOR DAMAGE (3)
MODERATE DAMAGE (18)
INSPECTED AND FIT TO OCCUPY (321)

APPENDIX D
STRUCTURAL DEBRIS REMOVAL FORMS

GLENVIEW INCIDENT STRUCTURAL DEBRIS REMOVAL
CONFIRMATION SAMPLING
UNIFIED COMMAND APPROVAL FORM

SITE ADDRESS:_____

Sample Identification:_____ Number of Samples:_____

Date Sample Collected:_____ Laboratory:

Cleanup Goal: California Environmental Protection Agency (CalEPA), California Human Health Screening Levels (CHHSLs; 2005) for metals and the calculated naturally occurring background concentration for arsenic

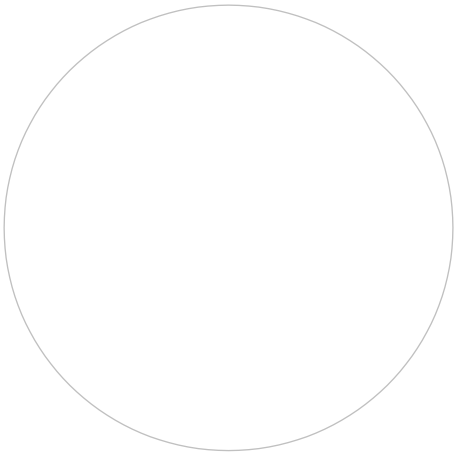
Date Approved:_____

Observations:

_____

_____

_____



_____ _____

Todd Thalhamer, P.E.
CalRecycle, Operations Section Chief

Planning Section Chief

GLENVIEW INCIDENT STRUCTURAL DEBRIS REMOVAL
Underground Storage Tank (UST)
CONFIRMATION SAMPLING
UNIFIED COMMAND APPROVAL FORM

SITE ADDRESS:_____

Sample Identification:_____ Number of Samples:_____

Date Sample Collected:_____ Laboratory: _____

Cleanup Requirements: The cleanup goal for UST's discovered at the Glenview Structural Debris Removal Program will be based on County of San Mateo's Ordinance Code for Underground Storage Tanks. The cleanup requirements for USTs will be less than 100 mg/kg for Diesel C10-C24 and non-detect for BTEX per LUFT guidelines.

Size of the Tank:_____Water Present (Y/N):____Number of Samples___

Date Approved:_____

Observations:

_____

_____

_____

_____ _____

Todd Thalhamer, P.E.
CalRecycle, Operations Section Chief

Planning Section Chief

GLENVIEW STRUCTURAL DEBRIS REMOVAL
Erosion Control Work Sheet

SITE ADDRESS:_____

Level of Erosion Control per Erosion Control Work Group: Level__ (1, 2, 3, 4)

Observations:

_____

_____

_____

NTS

_____
Todd Thalhamer, P.E.
CalRecycle, Operations Section Chief

GLENVIEW INCIDENT STRUCTURAL DEBRIS REMOVAL
ENGINEER'S OBSERVATIONS

Road Damage Survey for the Glenview Incident Area

Date: Pending

Observations: The following road survey was performed by the CalRecycle Operations Section Chief who is also a licensed civil engineer in the State of California. The initial road survey conducted on xxx, indicated x areas that should be repaired and/or replaced due to impacts from the Incident directly or indirectly from the x shipments of debris, concrete, and metal. These observations are only recommendations to County of San Mateo.

Todd Thalhamer, P.E.
CalRecycle, Operations Section Chief

GLENVIEW INCIDENT STRUCTURAL DEBRIS REMOVAL
ENGINEER'S OBSERVATIONS

SITE ADDRESS:_____

Date:_____

Confirmation Sampling Approved ☐ No ☐ **Yes** (See Confirmation Sampling Form)

Building ☐ No ☐ Yes Status _____

Erosion Control Level/BMP (1, 2, 3, 4) _____ (See Erosion Control Form)

Building over erosion control ☐ No ☐ Yes

Project Approved ☐ No ☐ **Yes**

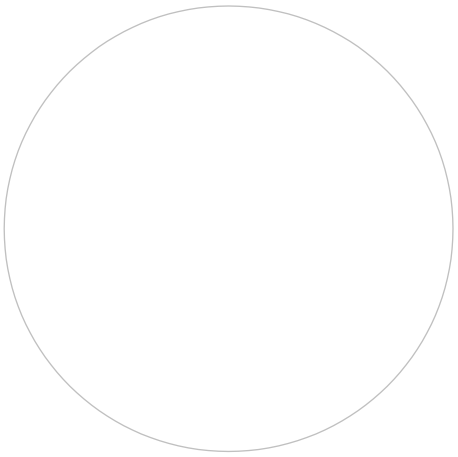
Noted Observations:

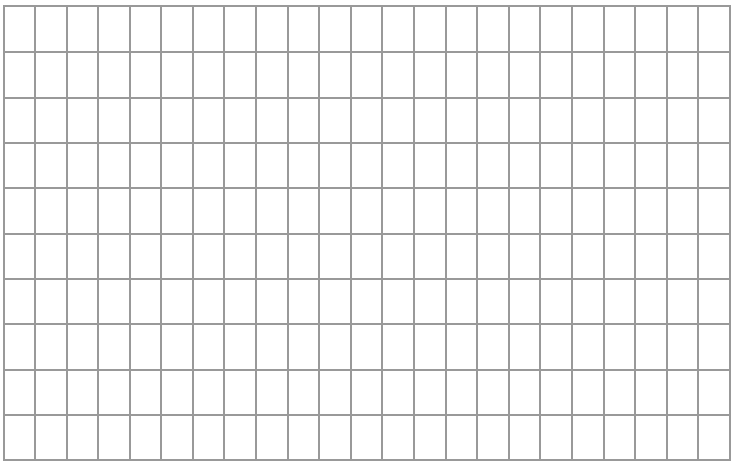
_____

_____

_____

_____





_____
Todd Thalhamer, P.E.

CalRecycle, Operations Section Chief

APPENDIX E

Acronyms and Abbreviations

ASTM	American Society for Testing and Materials
BAAQMD	Bay Area Air Quality Management District
BMP	Best Management Practices
CalEMA	California Emergency Management Agency
CalEPA	California Environmental Protection Agency
CalRecycle	The Department of Resources Recycling and Recovery
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CFCs	Chlorofluorocarbons
CHHSL	California Human Health Screening Levels
DROC	Debris Removal Operations Center
EPA	Environmental Protection Agency
HFCs	Hydrofluorocarbons
HCFCs	Hydrochlorofluorocarbons
HHW	Household Hazardous Waste
ICS	Incident Command System
NES	Network Environmental Systems, Incorporated
NESHAP	National Emissions Standards for Hazardous Air Pollutants

NIOSH	National Institute for Occupational Safety and Health
PCBs	Polychlorinated Biphenyls
PE	Professional Engineer
PM	Particulate Matter
PRC	Public Resources Code
REHS	Registered Environmental Health Specialist
USA	United States of America
USEPA	United States Environmental Protection Agency
USTs	Underground Storage Tanks
UXO	Unexploded Ordinance